

The Mining Journal

RAILWAY AND COMMERCIAL GAZETTE

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

[The MINING JOURNAL is Registered at the General Post Office as a Newspaper, and for Transmission Abroad.]

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LONDON, SATURDAY, MARCH 29, 1879.

[WITH SUPPLEMENT.] PRICE SIXPENCE.
PER ANNUM, BY POST, £1 4s.

MR. JAMES H. CROFTS, STOCK AND SHARE BROKER AND MINING SHARE DEALER, No. 1, FINCH LANE, CORNHILL, LONDON, E.C. ESTABLISHED 1842.

BUSINESS transacted in all descriptions of Mining Stocks and Shares (British and Foreign), Consols, Bonds (Foreign and Colonial), Railways, Insurance, Assurance, Telegraph, Tramway, Shipping, Canal, Gas, Water, and Dock Shares, and all Miscellaneous Shares.

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ACCOUNTS OPENED FOR THE FORTNIGHTLY SETTLEMENT
A Daily Price List, issued at 5 P.M., giving latest Quotations up to close of Market, and every Friday a general List containing closing prices of the week. MINES INSPECTED.

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50 Bettw-y-Coed, 18s.	20 Herodfoot.	50 Parys Moun., 10s. 6d.
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50 Chontales, 9s.	50 Javali.	15 Roman Grav., £8 3 9
20 East Van, 39s.	20 Leadhills, £25 5.	30 Rookhope, 6s.
15 Eberhardt, £4 13s. 9d.	50 Llanrwst.	20 Santa Barbara, £2 6s 3
10 Frontino, 22 7s. 6d.	45 Morfa Du, 18s.	30 St. Harmon.
50 Flagstaff, 5s.	25 N. Zealand Kap., 11s.	10 Tankerville, £3 13s. 9d.
25 Glenroy, 10s.	5 Pandora.	15 Van, £19 17s. 6d.
30 Glyn.	50 Penstruthal, 2s. 3d.	50 Van Consols, 11s. 3d.
	100 Festarena, 3s. 3d.	

*. SHARES SOLD FOR FORWARD DELIVERY (ONE, TWO, OR THREE MONTHS ON DEPOSIT OF TWENTY PER CENT.)
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RAILWAYS—SPECIAL BUSINESS.

FOREIGN BONDS—SPECIAL BUSINESS.

Fortnightly accounts opened on receipt of the usual cover.

JAMES H. CROFTS, 1, FINCH LANE, LONDON.

ESTABLISHED 1842.

MR. W. H. BUMPUS, STOCK AND SHARE BROKER, AND MINING SHARE DEALER, 44, THREADNEEDLE STREET, LONDON, E.C. ESTABLISHED 1867.

BUSINESS transacted in STOCK EXCHANGE SECURITIES
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TRAMWAYS, TELEGRAPHS, and all the LEADING INVESTMENTS.

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25 Blue Tent, £25 1/2.	50 Frontino, 22 7s. 6d.	50 Parys Moun., 10s. 3d.
20 Birdseye, 11s. 6d.	25 Frontino, 45s. 6d.	20 Richmond, 49 1/2.
3 Carn Brea, £24.	5 Great Laxey, £17 1/2.	15 Roman Grav., £8 3/4.
40 Colorado, 34s. 6d.	50 Glenroy, 10s.	180 Rookhope.
10 Cook's Kitchen.	25 Huitfall, 22s. 6d.	10 So. Frances, £11.
50 Canada Gold, 28s.	20 Herodfoot.	10 So. Condurrow, £11 1/2.
60 Chontales, 10s.	40 Javali, 6s. 9d.	20 Tankerville, £3 13s. 9d.
20 Devon Consols, 45s.	20 Kapanga, 11s. 6d.	5 Van, £20 1/2.
2 Dolcoath, £23 1/2.	25 Leadhills, £25 1/2.	20 Wheel Peavor, £29 1/2.
75 Don Pedro, 15s. 6d.	15 Mellanear, £3 13s. 9d.	20 W. Asheton, 21s. 6d.
15 East Van, 38s. 6d.	40 Marke Valley, 13s.	25 Wheel Grenville, £3 1/2.

MINES.—Many good purchases may now be made, especially in Tin and Lead Shares, some of which (now returning good dividends) are likely to have a considerable rise, besides paying exceedingly well as an investment. Shares in several SOUND PROGRESSIVE MINES may also be secured now on favourable terms, and will probably double their present value within the next few months.

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Herodfoot.	Pandora.	Van.
Huitfall.	Parys.	West Peavor.
Great Laxey.	Penstruthal.	

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Grogwinion.	South Frances.	Huitfall.
Glyn.	Tankerville.	Javali.
Great Laxey.	Van.	Last Chance.
Leadhills.	Colorado.	Panicillo.
Pandora.	Chontales.	Port Phillip.
Penstruthal.	Don Pedro.	Richmond.

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Chontales.	Hington Down.	Van.
Don Pedro.	Marke Valley.	West Chiverton.
East Caradon.	Parys Mountain.	Wheel Crebor.
Gawton.	Penstruthal.	Wheel Peavor.

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Don Pedro, 14s. 6d.	Ladywell, 15s.	Roman Gravels, £8 1s 3
East Van, £1 17s. 6d.	Leadhills, £2 7s. 6d.	Tankerville, £3 13s. 6d.
Glyn, 10s.	Parys Mountain, 10s.	Wheel Kitty, 4s. 6d.
Herodfoot, £2 5s.	Penstruthal, 2s. 6d.	W. Wm. Peavor, £2 7s 6d

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30 Bodidris, 21s.	70 Huitfall, 38s. 6d.	5 So. Frances, £10 1/2.
15 Colorado, £1 1/2.	35 Leadhills, £23 1/2.	100 Tamar.
2 Carn Brea, £25.	100 Llanrwst.	35 Tankerville, £23 1/2.
50 Devon Consols, £2.	50 Pandora, 7s. 6d.	5 Van, £20 1/2.
3 Dolcoath, £21 1/2.	65 Parys Moun., 10s. 6d.	5 Tincroft, £12.
75 Don Pedro, 16s.	100 Penstruthal, 2s.	25 West Chiverton, 30s.
50 Eberhardt, £4 18s. 9d.	95 Pestarena, 3s. 6d.	50 Wm. Grenville, £29 1/2.
15 Great Holway, £5.	50 Richmond, £9.	5 Wheel Peavor, £10.
3 Great Laxey, £17.	35 Roman Grav., £7 18 9	

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WANTED, TO SELL, HALF A SHARE in the above for £5000. The property is about half a mile square, and produces slate of the finest quality. £2500 of the above to remain as working capital to extend the works.

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REQUIRED, by a Gold Mining Company abroad, an experienced MINER, who has had experience in Deep Mining, who can use the Dial, and make Drawings, and who has had the control of men. One who has been engaged in Gold Quartz Mining abroad preferred.

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Buyers or Sellers of Mine Shares, Railways, Foreign Bonds, and Miscellaneous descriptions of Stock and Shares may send their orders, and have their business promptly attended to for immediate cash, or the fortnightly account current, or for a deferred settlement.

BANKERS: National Provincial Bank of England.

MR. F. CUNNINGHAM, STOCK AND SHARE DEALER, THE EXCHANGE, SOUTHWARK, LONDON, S.E.

LUSITANIAN MINING COMPANY (LIMITED).

Notice is hereby given, that in accordance with the Deed of Settlement, the ORDINARY GENERAL MEETING of this company will be HELD at this office, on THURSDAY, the 10th day of April next, at Three o'clock in the afternoon.

It is proposed that this meeting shall be held pro forma only, and adjourned to some day then to be fixed.

By Order of the Board, W. G. WILLIAMS, Secretary.

6, Queen-street-place, London, E.C., 28th March, 1879.

NOUVELLE MONTAGNE COMPANY, BELGIUM.

The GENERAL MEETING of the Shareholders will be HELD at the Hotel d'Angleterre, Liège, at One o'clock P.M., on the 19th APRIL next.

Lectures on Practical Mining in Germany.

CLAUSTHAL MINING SCHOOL NOTES.—No. CX.*

BY J. CLARK JEFFERSON, A.R.S.M., WH. 8C.,

Mining Engineer, Wakefield.

(Formerly Student at the Royal Bergakademie, Clausthal).

[The Author reserves the right of reproduction.]

SECTION V.

The thickness of the lining was calculated by formula, which showed (as it would have required 45 rings or cylinders to form the lining) 1.6 in. as the thickness for the lower 15 cylinders; 1.4 in. as the thickness for the middle 15 cylinders; and 1.2 in. as the thickness for the uppermost rings. In consequence of the difficulties in making and transporting rings of such dimensions and weight, at St. Vaast, only the lower 18 rings were made of cast-iron, the rest of the lining being completed by 28 rings (in four sets of seven each) made of plate iron, those of the lowest set being 7 in. thick, those of the next set 6 in. thick, those of the next set 5 in. thick, and those of the upper set 4 in. thick. These upper rings were 6 ft. high, formed of plates 40 in. broad, rivetted together flush, a vertical strip of iron passing along the length of the joints on the inside. The flanges at the top and bottom are formed of angle iron, and the cylinders are likewise strengthened by horizontal rings of angle iron, which serve the same purpose as the horizontal ribs in the cast-iron cylinders. The use of sheet-iron has the disadvantage that it is much more liable to rust than cast-iron; it can, however, be used with advantage as a temporary or lost lining when quicksand or the like is met with; and as it can be made of much less thickness than is advisable in the case of cast-iron, it may with advantage be used for the upper part of the lining, where the thickness required for cast-iron is small.

The tubbing at Gelsenkirchen consists of 52 rings, each 5 ft. in height, cast in single pieces, with an inside flange at the top and the bottom. The flanges are turned in a lathe, and lead sheeting placed between them, the joints being stemmed both back and front immediately they are bolted together at the surface. The total weight of the tubbing and bottom is 440 tons. The basin-shaped bottom has a man-hole in the centre, with a short projecting pipe, or funnel, bolted to it, and which is closed by means of a flat plate bolted on the top. The outer diameter of the horizontal flange or edge of this bottom is 1 in. less than the inside diameter of the flanges of the tubbing. To join this bottom with one of the flanges of the tubbing a false flange of wrought-iron in three segments is inserted between the two, being attached to each by means of bolts. The upper rings have holes 2½ in. diameter, cast in them, through which the hydraulic mortar for the backing of the tubbing can be introduced.

All the rings should be tested before being used; this is generally done by means of an hydraulic press up to pressures of 300 lbs. to the square inch for the lower cylinders. Besides this they are generally painted over with a coating of coal tar, in order to protect them from rusting.

First, after the whole of the lining has been lowered, the space left between the outside of the lining of the side of the shaft is filled with cement, or beton. That used in sinking the shaft at Dahlbueche, near Gelsenkirchen, was composed of sand, cement, trass, and hydraulic lime in the following proportions:—11 bushels of powdered and riddled lime, 11 bushels of river sand, 11 bushels trass, and 4 barrels of hydraulic cement. The mortar is run directly from two mortar mills through 4-in. sheet-iron pipes down the shaft, and through the openings in the tubbing. To prevent the mortar separating into its constituent parts, and in order that no part shall harden before it is covered by fresh mortar, the stream of mortar must be kept running. This arrangement is a great improvement on Kind's method of introducing it in boxes. The chief requirement to be fulfilled by the cement is that it should harden neither too quickly nor too slowly; as in the former case it may harden whilst being brought into its position at the bottom of the shaft before the next lot of cement is introduced, and in the latter case the cement filling would be liable to want of uniformity whilst hardening.

In order to complete the notice of this method of boring shafts, we extract the following particulars respecting cost from the Iron and Steel Institute Journal, 1877, and from a paper by M. Demmler, of Paris, in the Transactions of the Manchester Geological Society. The first refers to two shafts sunk at Meurichin, Pas de Calais, No. 1, commenced on April 1, 1872, and finished Dec. 31, 1873, to a depth of 228 ft.; No. 2 commenced on Sept. 1, 1873, and completed on July 31, 1875, to a depth of 292 ft.:

	No. 1.	No. 2.
Boring apparatus	£1600	£560†
Engines	1000	—
Wages and management	1840	2080
Transport	224	240
Temporary lining	560	800
Permanent lining	3800	4280
Screws, lead for joints	280	360
Timbering	—	320
Miscellaneous	1200	1360

Total

£10,540

£10,200

The details of the cost of sinking and tubbing at Gelsenkirchen, through 288 ft., which was commenced on May 1, 1874, and completed on June 30, 1875, are as follows:—

	£1030	7	2
Boring tower and shed	£688	10	4†
Boring apparatus	946	4	0
Steam-engines	4770	16	8
Tubbing	1029	18	2
Miscellaneous materials	419	10	10
Hydraulic mortar	2587	16	4
Wages	—	—	—
Cost of management, travelling expenses, and contractors' premium	2349	7	9

Total

£20,022

11 3½

The following table gives the cost per foot of eight shafts sunk by this method:—

Shafts.	Feet deep.	Diameter.	Total cost.	Cost p. ft.
At Meurichin, No. 1	228	10 ft. 6 in.	£10,504	£38 0
" No. 2	292	10 6	10,200	35 0
At Escarpelle	341	10 6	8,315	24 10
At l'Hopital, Moselle, No. 1	520	6 0	10,250	20 0
" No. 2	520	11 3	17,615	33 0
At St. Vaast, in Belgium	322	12 0	8,000	21 0
At Reenan, in Belgium	284	12 0	6,008	21 0
At Gelsenkirchen, Westph.	288	14 0	20,002	70 0

SINKING SHAFTS.—In our description of the various modes of sinking bore-holes we have mentioned that where the strata are such that the ground is liable to become loose, and fall in larger or smaller pieces into the bore-hole, it becomes necessary to insert a lining; which, however, is first resorted to when the falling in of pieces from the sides to the bottom of the bore-hole indicates this to be necessary. Exactly analogous to this mode of sinking bore-holes is the Kind-Chaudron method (just described) of sinking the shafts. When during the sinking of bore-holes quicksand, or the like running ground, is met with it becomes necessary to lower the lining simultaneously with, if not slightly in advance of, the boring, or rather sludging, out of the ground. In like manner when sinking shafts through loose ground, containing a great amount of

water, so-called running ground, is met with, which may be almost semi-fluid, not a foot of ground can be sunk without being lined. In such a case the lining of the shaft must proceed simultaneously with the excavation of the ground; indeed, in some cases the foot of the lining must be sunk a few feet below the bottom of the shaft, or in an extreme case the bottom of the shaft lining must be closed. The lining is lengthened at the top, and sinks either by its own weight or by being lowered into the ground. Such shafts are called by the Germans "sinking shafts" (Senkschachte). This expression, which we shall now use in the strict literal meaning of the words, must not be confounded with the English denomination "shaft sinking," which is used to denote any method of excavating and lining a shaft.

In sinking shafts—or more correctly the excavation of a shaft with a sinking lining—it may be necessary to excavate the ground at the foot of the lining, to enable the lining to be lowered simultaneously with the excavation of the ground. The main object, however, is to prevent the sides from falling into the shaft, and leaving dangerous open spaces behind or in the neighbourhood of the lining, which might allow of a sudden movement of the ground, with the result of the moving mass striking with such force against the lining as to break or fracture it. Nor is it necessary that the ground should be in such a loose or semi-fluid state that the weight of the lining itself suffices to cause it to sink as the ground is excavated. The friction on the outside of the lining may be so great that recourse must be had to weighting the lining (generally with pigs of cast-iron), or by adding to the parts of the lining till the upper end projects considerably above the surface of the ground, or to forcing it down, either by screws, jacks, or hydraulic presses, or even by ramming.

As can be well imagined, where the loose strata are of considerable thickness the friction on the outside of the lining may become so great that the above means will not suffice to force the lining down any further, and this may happen before the loose ground has been passed through. Recourse must then be had to the same expedient as is used in the case of bore-holes, when the lining tubes cannot be forced down any further—the insertion of a second lining of a smaller diameter within the first, in a telescopic manner. In order to reduce the friction on the outside of the lining, the lining, when of cast-iron (contrary to the usual manner with tubbings), has the flanges, ribs, &c., cast on the inside: the lining, of whatever material it may be composed, must have as smooth an exterior as possible. When the upper portion of the shaft passes through firm ground the precaution is sometimes adopted of excavating the shaft slightly larger in diameter, and placing wooden piles round the outside, in order to lessen the friction on the outside of the lining. One of the most important points in connection with the putting down of "sinking shafts" is the mode of dealing with the water. This may be either removed with pumps or driven back by means of compressed air; or, as in the case of the Kind-Chaudron method, the water may be allowed to stand in the shaft until it has been excavated, and the lining lowered on to a water-tight bed.

This method is, of course, resorted to almost exclusively only for passing through the running ground; the firm portion of the strata being passed through in the most suitable of the previously described methods. Indeed, where it is possible the running ground is sunk through to the water level by some of the other mentioned modes. This facilitates the weighting of the lining, by enabling a greater number of sets to be connected together.

Following the same order as in the previous divisions of this section, we shall consider the sinking of shafts of wood, of brick-work or masonry, and lastly of iron.

A sinking shaft of wood must consist of several lengths of wooden cylinders, which can be successively attached to each other at the surface as they are lowered. The foot of such a lining is almost invariably formed of cast-iron, the under side projecting as a sort of cutting edge. The upper side of the cast-iron ring is formed with a V groove, which serves for the reception of the ends of the staves which form the lining. The staves are about 6 ft. long, and fit at the upper end into the under side of a cast-iron ring, which is provided with a V groove on both the upper and under side of the ring. In order to hold the staves and the ring securely, from six to eight long bolts pass through both rings, and in the centre line of the staves. Sometimes the bolts pass through lugs on the inside of the rings, where the rings are cast in segments: this may be objectionable, as liable to give a one-sided pull. The staves forming the lining are made about 8 in. thick, and formed like the staves of a barrel. Sometimes the vertical joints are made with tongue and groove, and at others the vertical joints are made tight with tarred material, &c. The successive lengths are added as the lining is lowered; when necessary the lining is weighted, to facilitate the sinking. The ground at the bottom of the shaft is excavated only as is necessary to enable the lining to sink.

A better arrangement sometimes practised is to form the lining of solid cribbing. The foot of the lining is formed of cast or wrought iron, the under side forming a sharp cutting edge, to enable the lining to sink more readily into the ground. The separate cribs are joined together either by means of vertical bolts, 3 ft. 6 in. long, or by means of wooden dowels. The iron shoe, or foot, is connected to the lining generally by means of bolts. The outside surface of the shoe is usually formed vertical, with the inner side inclined.

GEOLOGICAL SOCIETY OF LONDON.

MARCH 12.—HENRY CLIFTON SORBY, F.R.S. (President), in the chair.

Lazarus Fletcher, B.A., British Museum; Arthur Samuel Hamand, M.Inst.C.E., Storey's Gate, and New-street, Birmingham; William J. Pope, Brookhill Park, Plumstead; and George W. Slater, F.C.S., Arundel-street, Prince's-road, Liverpool, were elected Fellows of the Society.—Rev. Joseph Finnermore, Truro Vicarage, Truro; Thomas Jas. Slatter, Evesham, Worcestershire; William H. Twelves-trees, Voskresensky, Zavod, near Melen, via Orenburg, Russia; Arthur Pendarves Vivian, M.P., Glendorgal, S. Columb Minor, Cornwall; and Ernest Westlake, Fordingbridge, Hampshire, were proposed as Fellows of the Society. Prof. Bernhard von Cotta, Freiberg; Dr. Nicolai von Kokscharow, St. Petersburg; and Dr. J. J. S. Steenstrup, Copenhagen, were proposed as Foreign Members; and Prof. P. J. van Beneden, Louvain; Prof. Guglielmo Guiscardi, Naples; and Prof. Gerhard vom Rath, Bonn, were proposed as Foreign Correspondents of the Society.—William Adamson Barrow, Assoc. Inst. C.E., Althorpe House, Queen's-road, Richmond Hill, Surrey; Gregory Dent, Ousegate, Selby; Julian John Leverson, Lieutenant R.E., Staff College, Camberley, Surrey; and Rear-Admiral Francisco Sangro Tremlett, R.N., Bellevue, Tunbridge Wells, will be balloted for as Fellows of the Society.

The following communications were read:—
1.—"On Perlitic and Spherulitic Structures in the Lavas of the Glyder Fawr, North Wales," by Frank Rutley, F.G.S.
2.—"The Gold-leads of Nova Scotia," by H. S. Poole, M.A., F.G.S., Government Inspector of Mines.

The author remarked upon the peculiarity that the gold leads of Nova Scotia are generally conformable with the beds in which they occur, whence Dr. Sterry Hunt and others have come to the conclusion that these auriferous quartz veins are interstratified with the argillaceous rocks of the district. With this view he does not agree. He classified the leads in these groups according to their relations to the containing rocks, and detailed the results of mining experience in the district, as showing the leads to be true veins by the following characters:—1. Irregularity of planes of contact between slate and quartz.—2. The crushed state of the slate on some footwalls.—3. Irregularity of mineral contents.—4. The termination of the leads.—5. The effects of contemporary dislocations.—6. The influence of strings and offshoots on the richness of leads. The author further treated of the relative age of the leads and granite, and combated the view that the granites are of metamorphic origin, which he stated to be disproved by a study of the lines of contact. He also noticed the effects of glaciation on the leads, and the occurrence of gold in Carboniferous conglomerates.

Mr. J. A. PHILLIPS confirmed the views of the author as to the leads of Nova Scotia being true mineral veins.

Mr. W. W. SMYTH stated that he thought the author of the paper had rendered a most useful service to geology in completely up-setting the theory—based on imperfect observation—of the bedded origin of the leads.

3.—"On Conodonts from the Chazy and Cincinnati groups of the Cambro-Silurian, and from the Hamilton and Genesee-Shale divisions of the Devonian, in Canada and the United States," by G. Jennings Hinde, F.G.S.

4.—"On Annelid Jaws from the Cambro-Silurian, Silurian, and Devonian Formations in Canada, and from the Lower Carboniferous in Scotland," by G. Jennings Hinde, F.G.S.

The next meeting of the Society will be held on March 26, when the following communications will be read:—1. "On the Geological Age of the Rocks forming the Southern Highlands of Ireland, generally known as 'The Dingle Beds' and 'Glen-garriff Grits and Shales,'" by Prof. E. Hull, F.R.S., F.G.S.—2. "Results of a Systematic Survey (in 1878) of the Directions and Limits of Dispersion, Mode of Occurrence, and Relation to Drift-deposits of the Erratic Blocks or Boulders of the West of England and East of Wales, including a Revision of many years' previous Observations," by D. Mackintosh, F.G.S.—3. "On the southerly extension of the Hesse Boulder-clay in Lincolnshire," by A. J. Jukes-Brown, F.G.S.—4. "On the Glaciation of the Shetland Isles," by John Horne, F.G.S., and B. N. Beach, F.G.S.

THE LIGHTING OF FIERY MINES.

BEING THE SUBSTANCE OF A LECTURE DELIVERED AT THE BRISTOL SCHOOL OF MINES ON MARCH 13.

BY WILLIAM MORGANS, F.G.S.

[Concluded from last week's Journal.]

If we suppose that one-fourth of our collieries yield inflammable gas it may be roughly estimated that over 70,000 safety-lamps are in daily use in this country. In the face of what we have been considering it is almost a matter of surprise that explosions have not been more frequent. One pure accident, or the reckless proceeding of one individual, may bring disaster upon the whole pit's company, and in this sense every collier knows when he descends the shaft that his life is in the hands of each one of his comrades. The majority of colliers of the present day cannot be considered to know as much as they did in former times about dealing properly with fire-damp, because they do not get the training and practice. When collieries were smaller and ventilating currents weaker it was common enough for small quantities of gas to loiter about the faces while work was going on, and men and boys were constantly exercising precaution against it. New men are never permitted to work under such terms of close acquaintanceship with gas. Collieries are at present worked on extended scales not then dreamt of. Ventilation currents are strong and swift, so that under the normal conditions the faces are entirely swept of gas, and the bulk of young colliers get only an accidental sight of fire-damp, from which they immediately retreat. The result is that being less familiar with it than was formerly the case they are more liable to make a blunder with their safety-lamps when surprised by an unusual influx of gas from which retreat may be very difficult. It must appear self-evident to most men that as long as fire-damp accumulations continue to be incidental to coal mining explosion will from time to time recur while this system of lighting prevails, and that in spite of every effort to prevent them.

Effort after effort has been made to produce a safety-lamp which shall really be safe under the circumstances which must commonly befall it, but whenever this object has been nearly attained, the lamp, owing to its cumbrousness or to its over-susceptibility, has been found to be quite unfit for the collier's use; and consequently, although the Stephenson and Mueseler are examples of considerable achievement, we are still virtually continuing to use lamps which are safe in name only.

It is no matter of surprise, then, that some men, realising the trouble this often leads us into, should rush to the opposite extreme and declare in favour of doing away with safety-lamps altogether, and of relying entirely upon a surplus of ventilation with the use of naked lights. It is to be feared that the attempt to put this into practice would lead to more frequent explosions, though most of them might be less severe in character than those we now experience. To any way out of the present unsatisfactory state of things objections will naturally present themselves, but they need not of necessity be insurmountable. The effort to perfect safety-lamps, resulting in a few material improvements, has well nigh exhausted itself without arriving at the degree of success required. It by no means follows that safety-lamps should, therefore, be abolished, but we think the time may have arrived for considering the advisability of varying the plan of grappling with the difficulty. The variation which strikes us as deserving consideration is one of reforming the manner of using safety-lamps by taking them entirely out of the hands of men and boys working in the colliery, and lighting the workings and roads by safety-lamps of a modified construction, which shall be erected at suitable situations, and be in the charge of a staff of men specially appointed to attend to all matters connected with the lighting. Of course lamps for this purpose, not being required to be very portable, should be constructed to meet the altered conditions, and would possess stronger lighting power than ordinary safety-lamps. Not having to be subjected to the frequent movements of ordinary lamps, but being more like fixed lights to be advanced in the workings only as occasion required, they could be made safety-lamps in a truer sense, self-extinguishable on a slight interference from any cause, with the normal conditions, and affording withal high illuminating power.

There seems to be no reason why common illuminating gas should not be advantageously utilised for such lights. Although many men appear to have made up their minds that no good is to be expected from the electric light for mining purposes, we cannot see why it should not under the organised system just indicated be found to be of great service in fiery workings. Out of the abundance of ingenuity which would be aroused several good lamps would soon be forthcoming, if it were once decided that such a system of controlled lighting would be preferable to the present precarious one. In many ways late experiences point in favour of a principle of lighting our fiery mines under a special organisation, which is to provide the light for the use of the men, who, however, may never interfere with it. This is, in fact, the principle we go upon in lighting our cities.

The chief objections to the system would probably apply less to the lighting of the roads than of the working stalls or faces. The collier would not be able to get a light close up to his work, and would find it difficult to see well in some cases, especially as so much light is absorbed by coal surfaces; and, moreover, his shadow would sometimes fall on his work, but these difficulties might admit of some amelioration. Then, again, the cost of lighting would be appreciably increased; but it is certain that all parties concerned would willingly make reasonable sacrifices for the boon of insuring safety of life and property.

If any of you will take the trouble to refer to the records of colliery explosions, and to examine the evidence (often highly conjectural, it is true) given before juries as to the causes of the disasters, you will find that the impeachment of safety-lamps is by no means rare. We need not go back no further than to the date of the recently concluded enquiry respecting the Abercrombie catastrophe of last September. The colliery in question was one of the finest in South Wales. Opened only a few years ago by a wealthy company there was no sparing of funds to procure the best of everything in the shape of means and appliances, and to establish the colliery upon the most modern footing. It was carried on with every customary care by a competent resident staff, under the advantage of able consulting aid. Yet observe what was reported to have been said by one of the chief officials—a gentleman whose great experience in that coal district gives weight to his words—when dealing with the subject of the cause of the explosion. "His opinion was that it did not occur through any tampering with the safety-lamp by any one of the workmen, for, taken as a whole, he did not think a more careful body of men ever went into a pit. His belief was that a large and sudden outburst of gas beyond human control took place; that it came upon the lamps in such quantities as to make

* Being Notes on a Course of Lectures on Mining, delivered by Herr Berggrath Dr. von Gunder, Director of the Royal Bergakademie, Clausthal, the Harz, North Germany.

† Part of the apparatus used at No. 1 shaft was also used at No. 2.

‡ The boring tool or drill cost 24/9.

§ The cost of the first shaft sunk at the same place, 340 ft. deep, by the ordinary method was nearly 100,000.

standing the care with which the lamps were examined, there might have been a defective lamp; or it might have been that simultaneously with the sudden outburst of gas a stone from the roof may have fallen upon a lamp and damaged it, and thus fired the gas. What an impressive picture! First, the circumspection of the victims; secondly, a natural outburst of gas; and then, a natural failure of a safety-lamp. There is a grim satire about the conviction that the vigilance and precaution exercised by the Government, by its Inspectors, and by the proprietors, officials, and employees of a colliery should all be at the mercy of such spontaneous circumstances as these, and should hang upon the degree of intelligence, or upon the freedom from carelessness and caprice of each individual engaged in the mine.

How far the system of coal getting which now obtains admits of modification to better accommodate the unreliability of the hand safety-lamps at present in use is entirely a distinct and separate matter. Beyond all question a great deal might be done in this direction by facing such an increase in the cost of getting the coal as must unavoidably follow, and it is far better that this should follow than that the hazard and peril of the existing state of things should be permitted to run on. Indeed it is not improbable that it would be best in the long run, even on the very grounds of economy, considering the enormous sacrifices, and the loss to national wealth, entailed by only one calamitous colliery explosion.

The modification which would be most urgently needed to meet this end would be the general adoption of the continental system of filling up with rubbish during the nights the spaces made by removal of the coal in the daytime, in order to obtain absolute security against accumulations of gas in old workings or "goaves," where it is wont to haunt retired chambers, and at times to creep out and menace the safety of the working places of the mine.

The writer has never had opportunity of seeing this system in work on the Continent, but was years ago informed of its features and success by Prof. Warington Smyth, who has often explained the plan of storing in the *remblais* (now and then transported from long distances on the surface) in lectures delivered at the Royal School of Mines, and the writer at various times made use of that information, and other particulars given in French works, for communication to the students when it was his privilege to instruct them at this Mining School. As the present students have doubtless gathered, from the excellent course of instruction they now receive, the advantages claimed for the system of employing a company of *remblayeurs* by night are not only a larger yield of coal and a lessened consumption of timber, but also greater security against explosions. It is natural enough that it should be so. Then if all these benefits attend the system surely they are enough to make the mouth water, and after all it might not be such a great hardship if John Bull were enjoined to appropriate like privileges to himself. At any rate the question of how far the system is applicable to British Collieries is one worthy of full enquiry by competent men. If such a system were adopted safety-lamps would be encompassed by far less danger than at present, and there would be a sense of relief in overcoming at least one fruitful source of accidents.

The sudden outbursts of "blowers" of gas would, however, still remain a source of danger where hand safety-lamps were used, because merely the exercise of the requisite presence of mind on the part of the individuals surprised by a blower is not to be relied upon, and even if it could it might be of no avail. Such blowers are often heard of, and whilst confessing to the belief that they are on occasions more imaginary than real, it is undeniable that they do sometimes burst suddenly into workings. Since there seems to be no controlling of blowers which invade some collieries we are met here by a further reason for endeavouring to supersede hand safety-lamps by a more reliable class of lights, which would present no risk of firing the gas.

We have not brought under notice any particular class of design for lamps suited to a system of regulated lighting, because a proper consideration of the merits of construction would be beyond the scope of this paper, which has to deal more with the general question of the manner in which safety-lamps ought to be made use of in collieries. But, in case any of you would like to design a lamp for use under such a system of intendency, it may be observed that the essential requirements are as follows:—

- 1.—It should be incapable of firing gas by any mishap likely to befall it underground.
- 2.—It should be self-extinguishable (a) when fire-damp is appreciably present; (b) when sustaining damage, or upon being disturbed from its normal position by falling or otherwise.
- 3.—It should be impossible for it to get dangerously over-heated, although affording a light far more powerful than an ordinary safety-lamp.
- 4.—It should admit of easy re-fixing at different points in the workings as required, and of being readily re-lit, and of being easily kept clean by the man appointed to attend to the lamps in a given underground district.
- 5.—The light should not be too costly.

The facility for breaking the circuit in the electric light would lend itself well to some of the foregoing requirements, and in the case of using ordinary illuminating gas the supply could also be nearly as well controlled. Any light must be well protected. The electric light will melt platinum, and, therefore, would quickly explode fire-damp if exposed to it. We may here mention the important fact that the mere pulling down of the wick in an ordinary safety-lamp surrounded by an explosive gaseous mixture will not extinguish it although the burning of the wick itself has ceased. The gas will continue to burn within the gauze until the lamp is taken completely out of the explosive mixture. When there has been no ready means of escape from an unlooked for flow of such a mixture a perplexity has arisen which has brought consternation upon many a collier.

In such times of depressed trade as the present there are not wanting complaints respecting the interference of legislation with British industries, but such complaints are not always just or clear-sighted. Past legislation affecting coal mines has been pregnant with benefit to the country, and has been as free from dead-letterism and inutility as any legislation of a kindred type. Certainly it cannot be said of it, as of some things, that "by great efforts it had accomplished great trifles." It has done substantial good as far as it designed to go. These remarks do not apply to heterogeneous "special" rules, many of which might be thrown into the melting-pot with advantage. It is to be feared, however, in despite of enforcing any number of existing rules and regulations, and of adding to them new ones as well as additional prohibitions, such as interdicting the use of gunpowder in mines, that as long as safety-lamps are entrusted into the hands of every man and boy working in the mine unless there are great changes in our present systems of working coal, no good grounds will exist for expecting any material lessening of underground explosions.

During the last 20 years great changes have been developing in our coal producing system. We are now getting familiar with the idea of outlaying a capital of two or three hundred thousand pounds on a colliery which must necessarily be of huge extent. In order to get an adequate return of such an outlay enormous quantities of coal must be landed daily, and this means the employment of a very great number of colliers. A pit's company may, therefore, mean some 500 even for a single shift, and before long we shall probably hear of a much larger number of men and boys being employed at one time in a pit. To meet this growth of operations we have had to adopt special means of ventilation, and to entirely reform our system of underground transport. But the plan of lighting remains the same. Great modifications have been effected in some directions and not in others, the result being that there is a want of fitness in things as they now stand.

We have no predilection for perplexing changes in the already trying requirements of legislation touching coal mines. There is, however, an evil which can only be stopped by some effective variation of practice or usage, and it is unwise "to stand firm on the old paths," if it is seen that they lead into pitfalls. If it is a naked truth that the dicta, injunctions, and appointments of the existing laws for preventing colliery explosions must continue to fall short of the attainment of their object as long as the present forms of safety-lamp are used in workings as they are now constituted, it is best to

the gauze hot enough to permit the flame to pass: or that in the sudden fright someone rushed in such speed through the explosive mixture as to force the flame through the gauze; or that, notwithstanding all this, and to be prepared to modify our practice in one or both these respects. We cannot drift on as we are going. Something must be done.

Our object has not been to attempt to lay down hard and fast lines respecting this important subject, but to direct attention to reasons which may recommend themselves for what may be termed a change of tactics. We are too conscious of the greater resources and experience of others to desire more than submit to unbiased judgement the views we have been led to lay before you. There is in this country no lack of gifted men whose general decision on matters of this nature can be safely trusted. Should they be of opinion that there is a case for experiment in respect of reforming the mode of lighting fiery mines, it is to be hoped that facilities for testing any improvements will not be wanting any more than the individuals who shall earnestly utilise and pursue them until rewarded with success.

SAFETY LAMPS IN MINES.

At the meeting of the Manchester Geological Society on Tuesday, Mr. E. W. Binney in the chair, the first of two papers on the important question of "Safety-Lamps," which have been jointly prepared by Messrs. Ashworth and Smethurst, of the Garswood Hall and other collieries near Wigan, was read before a numerous attendance of mining engineers connected with the district.

Mr. SMETHURST, who was the reader of the paper, said the most important question a mining engineer of the present day had to decide before opening up or continuing the safe working of coal mines was which safety-lamp he ought to choose out of the large number now invented to ensure the greatest security for himself, his workmen, and the mines under his care amidst the ever-varying conditions met with in their working. Hitherto this had been entirely left in the hands of the mining engineer, and the consequence was that each one had been left to choose his own lamp. It seemed strange that so much should have been done by Government and others to protect persons working in mines, and yet at the same time the lighting of mines had practically been neglected and left to chance. Had the Government paid more attention to this matter in passing the various Acts of Parliament for the working and regulation of mines, and provided means for carrying out experiments with the view of finding a safe lamp, there would have been no such loss of lives lost by explosions. The compilers of that paper had, therefore, brought forward the subject with the certain knowledge that the members of that society would bring forward all the information they could to second the few observations they had to offer. Papers had been read on safety-lamps before kindred societies, experiments had been made both by committees of mining institutes and privately by mining engineers, and in one instance by a Belgian Commission specially appointed for the purpose by the Belgian Government, which resulted in only those forms of lamps which had been approved by the Commission being allowed in Belgium. It was to be hoped that the Royal Commission just appointed by the British Government might after a full investigation advise Her Majesty to make a decree similar to that of the Belgian Government for the use of lamps made according to certain proportions. The importance of having additional compulsory regulations with regard to the lighting of mines had been forced upon the attention of everyone, and legislation to that effect ought not to be delayed any longer than was compatible with a very careful enquiry into the matter. After referring to the various experiments which had been made in the past by various mining institutes and others, and the result of which had been to condemn very strongly the use of the ordinary Davy lamp, Mr. Smethurst said the experiments which would be dealt with in that paper were commenced by Mr. Ashworth and himself prior to the terrible explosion at Haydock last year. From that explosion they received additional impetus in their subsequent experiments inasmuch as they believed the disaster in question was due to the passage of a flame through the gauze of a Davy lamp, with ordinary velocity in the ventilating current, assisted by the fine coal dust with which the ventilating current would be charged during the working hours. In these experiments, which they were at present continuing at Brynna, they fortunately had a most important element to assist them in making a thoroughly successful and practical investigation in their having obtained a good supply of pure fire-damp from that most dangerous of Lancashire mines—the Wigan Nine-feet. A brief history of safety-lamps was next gone into, and Mr. Smethurst said that if they were to describe the whole of the lamps which had been invented since their first practical introduction they would find that the general principle of them originated from the Davy, Stephenson, and the Clanny types, with the addition of metallic tubes in some instances, but he might add that the number of lamps invented between 1852 and 1875 averaged about six per annum. With regard to the efforts to produce a better and more brilliant light, it was observed that with coal-gas oil fire-damp could be more easily detected than with the ordinary lamp oils. In the experiments which were being conducted at Brynna it was found with regard to the Davy lamps that the smaller the diameter of the gauze the greater was the resistance to the flame passing, arising from the fact that the volume of gas burning inside the small gauze was not sufficient to heat so quickly as the large volumes contained in such lamps as the Scotch gauze lamps, and it was plain from the experiments that a Scotch lamp was not to be classed as a safety-lamp, and where used as such immediate steps should be taken to replace it with a proper safety-lamp. From the experiments, tabulated statements of which were given by Mr. Smethurst, the following facts have been deduced:—

1. That the greater the diameter of the gauze the more quickly would the flame pass.
2. That in an explosive atmosphere at the low velocity of 7 ft. per second, and with coal dust, the Davy lamp as ordinarily constructed was unsafe.
3. That whatever might be the height of the ordinary shield it was no protection or safeguard against flame passing, but in fact it was the danger.
4. That if the cylindrical glass shield was used as in the Jack lamp, and the smoke gauze made so long that the glass shield overlapped it by about a quarter of an inch, the safety of the lamp was immensely increased, and the flame would not pass until the glass was either broken up by the heat or the double thickness of gauze became heated sufficiently for the flame to pass, and this was the kind of lamp they would recommend for the use of a shot-lighter.
5. That the Davy lamp constructed after the design of the Smethurst Jack lamp, or that of Messrs. Ashworth and Woolryche's Jack Davy lamp, was still safer.
6. That in many cases the Clanny lamp could not be considered any safer than the Davy lamp, and this remark would also apply to the Bainbridge lamp.
7. That a ventilating current containing a small percentage of gas, sufficient to elevate the flame, which was followed by a highly explosive body of gas, was the most severe test a lamp could be put to, and few could stand it, and this was a fact which was also noted by the Belgian Commission. He regretted that they had not had time to make a proper series of tests with coal dust combined with fire-damp and air, but they might state, showing the importance of this part of the enquiry, that Mr. Galloway in his most recent experiments had proved that the mixture of some coal dust (not all at a very ordinary pressure) became inflammable when 0.892 of fire-damp was added, and it then burned with a red smoky flame. In testing the effect of concussions a few experiments were made, none, however, of which were successful; but as the writers of the paper had seen successful experiments of that class they were satisfied that if an ordinary Davy lamp were standing in an explosive atmosphere, or if an explosive atmosphere sufficiently surrounded the lamp at the moment of concussion, the flame would pass the gauze without it becoming red-hot. As probably some expression of opinion would be expected from them with respect to the experiments, he might state most emphatically that the Davy lamp as ordinarily constructed and in daily use was not safe in coal seams giving out fire-damp, more especially as the working of such mines necessitated increased ventilation, and, therefore, in some parts at least increased velocities; that a lamp to be a good safe lamp must give a maximum quantity of light, and thus remove one temptation to the opening of lamps clandestinely; that the look should be simple and effective, and that, if possible, the opening of the lamps should extinguish the light; that the lamp should be self-extinguishing in an exhausted atmosphere, but that every lamp should be made according to such proportions and dimensions as experiments might prove to be the safest; that the workmen's lamps should be cleaned at the colliery, and be delivered to the workmen ready for use without further examination, excepting so far as regarded the testing of the look, and that every lamp should be tested as it came out of the pit, and a new one before it went down in an explosive atmosphere, which was now carried out at some collieries. With regard to the lamps they had tested, he might state that the one which gave the steadiest and best light, simple of construction and self-extinguishing, was the Musellier. The Elvin was too sensitive, the Gray very heavy, also the Williamson. The Felton was quite safe, but was heavy and complex in its construction, and gave a very poor light except in a nearly still atmosphere. In conclusion, they wished to state that their next paper would be practical, and would principally consist of a record of further experiments, with a description, drawings, and tests of two lamps which they invented to meet the requirements which had been set forth in the paper.

A vote of thanks having been passed to the compilers of the paper, the CHAIRMAN observed that he had heard the Davy lamp condemned for a great many years, but he supposed the name "safety" had hitherto overcome all opposition. What had struck him about the paper which had just been read was the thorough and practical manner in which the experiments had been carried out, and he should be glad to hear the opinions of some of the mining engineers present.

Mr. DICKINSON, H. M. Chief Inspector of Mines, observed that there were a great many practical men present, and he had himself on two occasions an opportunity of witnessing some of the experiments. He wished to refer to an allusion which had been made in the paper to the effect that the Government had not taken sufficient interest in the placing in the hands of the miners a safe lamp, although in other respects measures had been adopted for their safety. An application on this point had been made to him on this point by the gentlemen who had been conducting the experiments at Brynna, and he had communicated with the Home Secretary on the subject. Mr. Cross manifested a lively interest in the matter, expressing his desire to help them in the experiments so far as possible, and it was only on the subject being brought under the notice of the Treasury, and on considering the difficulties that existed with respect to the numerous inventions of lamps, that it was thought it would be better to leave the matter in the hands of the public.

Mr. SMETHURST observed that his remarks with regard to the Government applied only to the time before these experiments were made. Mr. DICKINSON, in answer to a question, said the Musellier lamp required a little care in using. Mr. G. L. FRYER said that he had been told that they tried the Musellier, but they had not a fireman who could use it without it going out, for working with it was entirely out of the question.—Mr. SMETHURST said that in use the lamp must be kept up straight, and it would not then go out.

After some further remarks it was decided that the discussion should be ad-

journal until the second part of the paper was before the members, the Chairman observing that the warning which had been given about certain lamps not being safe ought to be thoroughly considered.

SUGGESTIONS FOR SAFE AND ECONOMIC GENERATION OF STEAM.

The report of Mr. HENRY HILLER, the chief engineer of the National Boiler Insurance Company, Manchester, upon the technical work done during 1878 has just been issued, and contains a large amount of valuable information and useful suggestions. He is enabled to state that they have had no explosion during the year, and can, therefore, again refer with satisfaction to the comparative immunity from disaster of the boilers inspected by them, and especially as no life has been lost by explosion of a boiler under their inspection since early in 1870, or about nine years ago; whilst in the United Kingdom alone no less than 524 persons have lost their lives and 936 have been injured by explosion of boilers not inspected by this company. These facts are the strongest proof of the value and effective character of the service rendered, as exemplifying the necessity for such independent inspection as the company undertakes.

External corrosion is the most serious defect to which boilers are liable, explosions arising therefrom being generally of the most destructive character, and often also involving great loss of life, &c. The corrosion and its cause being generally invisible when the boiler is at work, the danger is not appreciated by owners and others; as many erroneously imagine that so long as the water supply is kept up in the boiler explosion cannot occur. The chief engineer finds it most difficult to overcome the ignorance, prejudice, and mistaken ideas which too often exist respecting the setting of boilers. The flues of many are so cramped that they can neither be cleaned nor examined; the results being, after a short period of work, bad draught through accumulation of deposit, the boiler-plates covered with non-conducting matter, with subsequent waste of fuel, leakages and corrosion, and other defects, which if detected in time could be easily remedied, but which being neglected involve dangerous risk. Some boiler seatings are of such breadth and sufficiently massive to bear ten times the weight of the boiler they have to carry. The flues of all boilers should be accessible for examination and thorough cleaning. He remarks that in many instances owners are misled by boiler-makers and others, who, although they may be good workmen, &c., are too often ignorant of the absolute necessity for complete examination of boilers if ordinary safety is to be secured.

An amusing instance of the way in which the useful labours of the company are sometimes estimated is given in the report. On one of their inspectors thoroughly examining a small vertical boiler he found the upper part of the fire-box thinned to about 1-16 in. for a considerable area, the hammer easily passing through when he tested it. The chief engineer received a strong and somewhat threatening letter from the owners, complaining of the inspector having stopped their works; they overlooking the fact that he had rendered them valuable service by discovering what would doubtless have led to a destructive explosion. He has to caution users of all classes of boilers against the bad practice of throwing wide open the furnace door in order to cool down the boiler when the steam is rising. This is especially dangerous with externally fired boilers, when the feed-water contains deposit, as overheating of the furnace plates to some extent always occurs in ordinary work. Opening the fire doors, or rapid filling up with cold water, causes sudden and local contraction, with consequent excessive strain and fracture. In connection with the inspections, many plates were reported defective and blistered through their being laminated. Some of them were in the furnace parts of tubes of high-pressure boilers. Some of the furnace tubes were strengthened with flanged seams, which rendered necessary the entire removal of the front end plate, for the purpose of renewing the defective tube plate. This manifests the advantage of the solid flanged hoops, which permit the removal of a plate in a furnace tube with little difficulty. He finds these hoops in actual work are at least equal in every other respect to the flanged seams, although great stress is laid by some parties on the fact that with the latter the rivets are not exposed to the direct action of the fire. A case is mentioned in which a Lancashire boiler had been stopped for slight repairs to a valve. It was filled with water to the usual height, but the blow-out tap was not closed. The opening to the latter was choked by some mud which retained the water until the pressure reached about 20 lbs. per square inch, when the attendant noticed the level in the glass rapidly falling. He commenced to draw the fires, but before he could complete one of them the water had fallen so low that the crown of the other furnace was overheated and very much distorted, fortunately without rupture of the plates. The boiler was fitted with a low-water safety-valve, but had no reliable fusible plugs, which would, doubtless, have prevented the injury and the great danger incurred.

With regard to the advisability of compounding existing condensing engines, Mr. Hiller suggests that where these are overloaded, and the boilers in connection will permit of a suitable increase of pressure, great saving may be effected; but in many instances the better course would be to put down new engines and boilers suitable for the work required. The compound system is preferred on account of the avoidance of the great initial strain which is unavoidable with the single cylinder engine working with a high grade of expansion, as the load can be more uniformly distributed throughout the stroke; whilst with few exceptions the consumption of steam in compound engines is comparatively below that in the single cylinder engines. The proportions of cylinders in compound engines vary very considerably. Where it is desired to equalise the load, and the pressure in the boilers is (say) 80 lbs. per square inch, a proportion of capacity of 1 to 4 has been found to give good results in engines fitted with ordinary slide valves worked by eccentrics. If the low-pressure cylinder is proportionately less the steam must be cut off at an earlier point in the high-pressure cylinder, but this will depend on the load to be driven, the pressure in the boilers, &c. Hence it is necessary that in all cases the proportions should be arranged to suit the respective circumstances and requirements.

Most careful calculation should be made where it is proposed to convert existing single engines into compound ones, as much disappointment has resulted by the adoption of cylinders of unsuitable proportions. In some cases after great outlay the results obtained were inferior to those secured before the alterations. Some parties advocate the use of a small high-pressure cylinder, the capacity of the low-pressure one being in the proportion (say) of 8 to 1, the steam being carried the whole length of the stroke in the high pressure cylinder. This involves the low-pressure cylinder being of large size, and I believe considerably increases the comparative loss arising from the cooling effect of the condenser. The high-pressure cylinders have in many cases been made too large, so that the pressure of the steam was insufficiently reduced at the point of its final exhaust, and thus too much work was thrown on the condenser, involving a vitiated vacuum with consequent increase in the consumption of fuel. The position of the cranks is a matter upon which much diversity of opinion exists. Where a pair of compound engines are coupled to the same crank shaft it is apparently the most economical arrangement for the low-pressure engine to lead about 1-12th of a revolution, as the steam from the other cylinder then exhausts freely into the low-pressure one. If the character of the work necessitates the cranks being placed at right angles a receiver of good capacity and well protected against loss of heat is of considerable benefit in reducing the variation of the back pressure in the high-pressure cylinder. If an engine be too small for the load to be driven, and its speed cannot be increased, expansive working cannot be adopted, and waste of steam ensues; whilst if, on the other hand, the engine be too large, there is great loss of steam through the friction of driving so large an engine, but often a still greater one through the large condensation of steam in the excessively large cylinder.

Experience has demonstrated the great economy and advantage of quick speed engines as compared with those running very slowly. The piston speed of many is so low that the steam admission has to be continued almost to the end of the stroke. Such engines thus work under conditions equally unfavourable to economy to those which exist in engines too small for their work. A quick piston

speed is preferable; but if the engine be large in proportion to its work rapid reciprocation may become a source of loss, if the load does not permit of a fair average pressure being maintained in the cylinder. He adds that the best results can be obtained with non-condensing engines, where the initial pressure on the piston is (say) about 60 lbs. above the atmosphere, the engine being provided with expansion gear, and the speed of piston about 350 ft. per minute—when the load is from three to three and a half times the nominal horse-power; this being taken on the basis of 10 square inches of piston for each nominal horse-power. If unprovided with a cut-off valve the best load is from one and three-quarters to twice the nominal power, the steam pressure with such loads being reduced to about $3\frac{1}{2}$ to 4 lbs. above the atmosphere at the point of exhaust. In ordinary condensing engines fitted with expansion gear or cut-off valves, and assuming 22 square inches of piston as equal to one nominal horse-power, the speed of piston being about 450 ft. per minute, the best economical results can be obtained when the load is about five and a half times the nominal horse-power. If the engine has ordinary slide valves only, a load equal to about two and three-quarters times the nominal power would be fairly economical.

So much difference of opinion exists respecting the utility or otherwise of the "steam jacket" that its use is comparatively limited; but Mr. Hiller considers it is of great economical advantage when properly applied to condensing engines working with a high grade of expansion. The report of the Industrial Society of Mulhouse shows that, with a Corliss engine, the economy realised by the use of the steam jacket was incontestable, its value increasing as the load on the engine diminished. The advantage of the systematic inspection of boilers carried out by the company cannot be questioned, and the pecuniary benefit of the arrangements which are entered into ought to be as readily appreciated by owners of boilers as the benefits of fire insurance, whilst the information given in the annual reports is alone a very ample equivalent for the premiums paid. The utility and the success of the company are alike matters for congratulation.

WATSON BROTHERS' MINING CIRCULAR.

WATSON BROTHERS,
MINEOWNERS, STOCK AND SHARE DEALERS, &c.
1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON.

Ten years ago the weekly information which had previously been published for a great number of years in *WATSON BROTHERS' Mining Circular* was transferred to the columns of the *Mining Journal*, with the following announcement; which is now reproduced in consequence of the numerous letters and enquiries handed to them of late in reply to one which appeared in the *Journal* on the Clementina Mine.

In the year 1843, when mining was almost unknown to the general public attention was first called to its advantages, when properly conducted, in the "Compendium of British Mining," commenced in 1837, and published in 1843, by Mr. WATSON, F.G.S., author of "Gleanings among Mines and Miners," "Records of Ancient Mining," "Cornish Notes" (first series, 1862), "Cornish Notes" (second series, 1863), "The Progress of Mining," with Statistics of the Mining Interest, annually for 21 years, &c., &c. In the Compendium, published in 1843, Mr. Watson was the first to recommend the system of a "division of small risks in several mines, ensuring the success in the aggregate," and Messrs. WATSON BROTHERS have always a selected list on hand. Perhaps at no former period in the annals of mining has there been more peculiar need of honest and experienced advice in regard to mines and sharedealing than there is at present; and from the lengthened experience of Messrs. WATSON BROTHERS they are emboldened to offer, thus publicly, their best services and advice to all connected with mines and mining.

Messrs. WATSON BROTHERS are daily asked their opinion of particular mines, as well as to recommend mines to invest or speculate in, and they give their advice and recommend mines to the best of their judgment and ability, founded on the best practical advice they can obtain from the mining districts, and they will not be held responsible, nor subject to blame, if results do not always equal the expectations they may have held out in a property so fluctuating as mining.

The great extension of mining business, the difficulty so often complained of by country shareholders in getting accurate and disinterested information as to the state of Cornish and Foreign Mines, and of the financial and real position of mining companies generally, have induced Messrs. WATSON BROTHERS to make their Circular now published in the *Mining Journal* more extensively known, and to state—

That they issue daily to clients and others who apply for it a Price List (as supplied to most of the London and country papers), giving the closing prices of Mining Shares up to Four o'clock.

They also buy and sell shares for immediate cash or for the usual fortnightly settlement in all Mines dealt in on the Mining and Stock Exchanges, at the close market prices of the day, free of all charges for commission. They deal also, on the same terms, in the Public Funds, Railways, Telegraphs, and all other Securities dealt in upon the Stock Exchange.

Having agents in all the mining districts, they are constantly getting mines inspected for their own guidance, and will also obtain special reports of any particular mine for their clients, for the inspecting agent's fee of £2 2s.

D'ERESBY CONSOLS adjoins D'eresby Mountain, has the great Gorse heading, the Fuchuslas, Owen's, and the Cobblers' lodes, and is being proved quietly, and at little expense. The latter, for several reasons—1st, D'eresby Mountain is proving the Gorse lode, and also driving No. 1 level on the Fuchuslas lode towards the boundary, and this is not only proving it there, but will unwater it to a good depth in D'eresby Consols. The lode in the No. 1 level end is of great promise and productiveness, and was that upon which D'eresby Mountain was started. The Cobblers' has been worked to a shallow depth down to the water for a length of about 200 fathoms, and yielded, it is said, some thousands of pounds worth of ore. An adit was then taken up from the valley to get under this lode and unwater it. This, when the present company commenced, had been driven 200 fms. at a cost of at least 30000l., and altogether it was stated at the meeting in August about 10,000l. had been expended in permanent works, of which the present company have the benefit. In fact, before the late company had to stop for want of funds this mine was thought more of than D'eresby Mountain. We cannot now be far off the Cobblers' lode in this deep adit, and hope for good results from it shortly. Owen's lode has also been a very productive shallow. The adit is being driven on an east and west lode, and the Cobblers' will be cut at the junction.

ABERLYN has the whole of the great Gorse lode for 300 fms. long, and there was never such a large deposit of blende known without courses of lead to follow. The shale part of the lode has every appearance of lead.

ROCKHOPE.—The report of the new manager seems to confirm the old statements as to the productiveness of the mine, but the fall in lead, serious delays in dressing operations, and the severe winter have so delayed sales that the finances have again run short, and the directors propose to borrow what they require on the plant, &c. Capt. Tonkin adds in his report that by driving the 42 level 72 fms. further east there would be added 1224 fms. of ore ground laid open, in addition to the 2000 already discovered, and that if lead were at the old price he would not ask for any money to carry the mine through.

HERODSFOT.—The first sale of lead, we understand, will be next month. The ore is rich for silver, and fetches a higher price than ordinary lead ore.

PARYS MOUNTAIN.—In reply to several enquiries we may state that a good many legal forms had to be gone through in proceeding with the reconstruction scheme in accordance with the resolution of the general meeting referred to; these have delayed matters, but the new company has now been registered, and provisional officers appointed, under the name of Parys Copper Corporation (Limited), and notices for applications for shares, some thousands of which have already been privately applied for, will be out in a day or two. The available capital of the old company having become exhausted, there was no alternative but to wind it up; and by the present plan every holder gets a fully paid-up share *pro rata* in a strong company, as well as in a mine that only requires a certain outlay of capital to make it a great success. This capital will be provided by the new company.

Three months ago the shares in Parys Mountain were at 4s. each, owing to the want of capital and the fear of winding up. Since the reconstruction scheme was mooted they have risen to 10s. each, and

Peak Forest Company, Limited.

CAPITAL £20,000, IN 10,000 SHARES OF £2 EACH.

2500 of which are now offered for subscription.

The whole proceeds of these shares now offered will be used for carrying out the recommendations of Mr. Stewart, and in placing the mines in a thoroughly satisfactory position. It is estimated by the most careful and reliable authorities that this sum is sufficient to secure this great run of mines being placed to realise even in the present extremely depressed and bad times a return of 20 per cent. per annum.

Applications will be received by Mr. W. J. LAVINGTON (the Secretary to the Company), 14A, Austinfriars, London, E.C., from whom reports can also be obtained,

we have done our best to carry it through. The shareholders will now receive a fully paid-up share *free* for each one he now holds, with the option of taking further shares at 10s., in two easy instalments; and possibly the further option also of claiming the like number of shares at 10s. at any time within four months, before which time ore will have been met probably in the 90 cross-cut south, and shares may be worth 2l. to 3l. each. Thus this second option would be of great value. Supposing, for instance, a shareholder takes 200 shares at 10s., he would have the right to take 200 more if he chose any time within four months, whatever they might be worth in the market. In this case, and if this plan be adopted, only 6000 or 7000 would be issued in the first instance.

CAPE COPPER next week.

SATURDAY, MARCH 23.—Market very quiet, and prices generally rather easier. Carn Brea, 30 to 32½; Dolcoath, 27 to 29; South Condurow, 11 to 11½; South Frances, 9½ to 10½; Tincroft, 9 to 9½; Peavor, 9 to 9½; West Bassett, 4 to 4½; West Frances, 4 to 4½; Van, 30 to 31; Great Laxey, 17 to 17½; Roman Gravel, 8 to 8½; Aberlynn, 10 to 12; Herodsfot, 3 to 4; Leadhills, 2 to 2½; Tankerville, 3½ to 4; Parys Mountain, 10s. to 12s.; West Tolgus, 28 to 30; Crebor, 6s. to 8s.

MONDAY, MARCH 24.—Market very dull for both lead and tin shares, and prices are again lower. Van, 19½ to 20½; Great Laxey, 16½ to 17½; Roman Gravel, 8 to 8½; Tankerville, 3½ to 4; Leadhills, 1½ to 2½; Herodsfot, 3 to 4; Carn Brea, 30 to 32; Dolcoath, 27 to 29; Tincroft, 9 to 10; South Frances, 9½ to 10; South Condurow, 11 to 11½; West Bassett, 4 to 4½; West Frances, 4 to 4½; Peavor, 8½ to 9½; Parys Mountain, 10s. to 12s.; West Tolgus, 28 to 30; Devon Great Consols, 1½ to 2; Crebor, 6s. to 8s.

TUESDAY, MARCH 25.—Market continues very flat, and prices are as follows:—Aberlynn, 10 to 12; Bettw-y-coed, 16s. to 20s.; Carn Brea, 29 to 31; Devon Great Consols, 1½ to 2½; Dolcoath, 27 to 29; East Van, 1½ to 1½; Glenroy, 5s. 6d. to 10s.; Great Laxey, 16½ to 17½; Herodsfot, 3 to 4; Leadhills, 1½ to 2½; Parys Mountain, 10s. to 12s.; Roman Gravel, 8 to 8½; South Condurow, 11 to 11½; South Frances, 9½ to 10; Tankerville, 3½ to 4; Tincroft, 9 to 9½; Van, 19½ to 20½; West Bassett, 4 to 4½; West Frances, 4 to 4½; Peavor, 8½ to 9½; Parys Mountain, 10s. to 12s.; West Tolgus, 28 to 30; Crebor, 6s. to 8s.; Don Pedro, 16s. 10s. 6d.; Richmond, 9 to 9½; Santa Barbara, 2 to 2½.

WEDNESDAY, MARCH 26.—Market very inactive. Dolcoath weaker at 26 to 28; Devon Consols, 1½ to 2½; Roman Gravel, 7½ to 8½; West Bassett, 3½ to 4; West Frances, 3½ to 4½; Peavor firmer at 9 to 9½. Other quotations same as yesterday.

THURSDAY, MARCH 27.—Market firmer for tin shares at advanced prices. Carn Brea, 30 to 32; Dolcoath, 28 to 30; South Condurow, 11 to 11½; South Frances, 10 to 10½; Tincroft, 10 to 10½; West Bassett, 4 to 4½; West Frances, 4½ to 5; Agar, 3½ to 4; Grenville, 2 to 2½; Van, 19 to 20; Great Laxey, 16 to 17; Herodsfot, 3 to 4; Leadhills, 2 to 2½; Roman Gravel, 7½ to 8½; Tankerville, 3½ to 4; East Van, 1½ to 2; Aberlynn, 10 to 12; Parys Mountain, 9s. to 11s.; Devon Great Consols, 1½ to 2; West Tolgus, 28 to 30; Crebor, 6s. to 8s.; Peavor, 9 to 9½; Santa Barbara, 2 to 2½; Don Pedro, 15s. to 16s.; Frontino, 3½ to 4.

FRIDAY, MARCH 28.—Active demand for tin shares at an advance. Lead shares also firmer. Carn Brea, 32 to 34; Dolcoath, 29 to 31; South Condurow, 11½ to 12; South Frances, 10½ to 11; Tincroft, 11 to 11½; West Bassett, 5 to 5½; West Frances, 4½ to 5; Agar, 3½ to 4½; Peavor, 9½ to 10; Grenville, 2½ to 3; Van, 19 to 20; Great Laxey, 16 to 17; Roman Gravel, 8 to 8½; Tankerville, 3½ to 4; Aberlynn, 10 to 11; Tankerville, 3½ to 4; Herodsfot, 3 to 4; Leadhills, 2½ to 3½; East Van, 1½ to 2; West Tolgus, 1½ to 1½; Parys Mountain, 9s. to 11s.; Devon Great Consols, 2 to 2½; Parys Mountain, 9s. to 11s.; Santa Barbara, 2½ to 3½; Richmond, 9½ to 10; Cape Copper, 26 to 28; Frontino, 3½ to 4½.

MR. WILLIAM H. H. WATSON begs to offer his advice and services to Shareholders and Intending Investors in Mines, and in the Purchase and Sale of Shares.

W. H. H. W. has Special Business in Herodsfot, Parys Mountain, Wheal Peavor, South Frances, D'eresby Mountain, Tankerville, Clementina, Aberlynn, &c., at the lowest net market prices.

Address: W. H. H. WATSON, 1, ST. MICHAEL'S ALLEY, CORNHILL, LONDON, E.C.

THE WEEK.

SATURDAY, MARCH 23.—Copper shares met with good enquiry, and were firm. Devon Consols, 1½ to 2½; Dolcoath, 27 to 29; Lead shares were rather offered. Van could be had at 20½, and Tankerville at a little over 4. Shares in tin mines were quite neglected. Unified lost Friday's improvement, and was a dull market at 45½, the Preference being neglected at 70½. Oriental Bank shares were once more pressed for sale, and were dealt in below 25. They have frequently fetched twice this sum. Shares are 26l. each, and fully paid, but the shareholders are liable for another 25l. It is understood that the losses on the China trade preclude any hope of a dividend.

MONDAY.—It was announced to day by the directors of the Oriental Bank Corporation that the heavy loss of the last six months will absorb nearly the whole of the reserve fund. The shares were a good deal dealt in at price varying from 22½ to 23½. One or two mining shares marked a decline, Tankerville and Eberhardt both receded to 4. Leadhills, 2 to 2½; Roman Gravel, 8 to 8½; Tankerville, 3½ to 4; Van, 19½ to 20½; Eberhardt, 3½ to 4½; Don Pedro, 14s. to 16s.

TUESDAY.—The first transaction marked in Oriental Bank shares was at 20½, then other shares changed hands at 17, the closing price being 17 to 19, or 4l. lower. Other banks were considerably affected, County Union and Westminster each falling 1l. Unified managed to recover to 45½, the Preference touching 71. Erie shares and bonds were pressed for sale; the First Mortgage fell to 105, and the second to 62½, the shares being 23½ to 24. In home railways the principal feature was the heaviness of North British, which declined 2l. (79½ to 80). Brighton, A. closed at 111½ to 112½, the same as for the last three days.

WEDNESDAY.—Most of the business done in railways was centered in North British. The report that an injunction to restrain payment of the poor little dividend recently declared would be sought for sent the price down to 78. Instantly, with their usual discernment, every third speculator announced that now was the time to sell before the stock fell to 70. Those who acted on the "tip" soon found that some adverse agency was mysteriously at work, as there was a recovery straight away to 80.

THURSDAY.—Although the shares of the Javall Company have been long neglected, and command only nominal prices, the report of the directors just issued states that the result of the operations for the year ended Dec. 31 were more favourable than those of any previous year. It is added that the greater portion of the 10 per cent. debentures falling due in May next have been renewed at 7 per cent. Van shares fell to 20 (the meeting was held to-day), while Eberhardt rose to 4½, 4½. British, after being 80, ran down rapidly to 75½.

FRIDAY (Opening).—Turks are mostly higher, the Fives being 11½ to 12. Ottoman Bank shares have recovered to par (10). North British at first were 78½, then soon after 79½ to 79. The contango is ½. On Turks and Egyptians 5 per cent. is charged. Unified still 46½ to 46½. In mining shares there is a marked improvement in tin shares. South Condurow, 11½ to 12; Wheal Grenville, 2½ to 3. Lead shares are quiet, Leadhills, 2½ to 3½; Van, 19 to 20; Roman Gravel, 8 to 8½; Eberhardt, 4½ to 4½; Richmond, 8½ to 9; Devon Consols, 2 to 2½; Parys Mountain, 9s. to 11s. Two o'clock.—Erie Seconds have receded from 63½ to 62½. Home railways are rather firm, Brighton, A. being 113 to 114; Dover, A. 112½ to 112½; and Great Eastern, 54½ to 54½. Unified and Turkish Fives are unchanged compared with last account, the making up prices of Brighton, A. and Great Eastern show a rise of 2l. British have fallen from 83½ to 79. Cape Copper make up at 26½; Van at 19½; and Great Laxey at 16½, being in each case same as last time. Richmond have receded from 9½ to 9½. Four o'clock.—Towards the close Unified, Turkish Fives, and Ottoman Bank shares became easier. Railways left off firm. Great Eastern reached 54½; Brighton, A. touched 113½ at one time. Eberhardt shares advanced to 4½. Buyers of West Frances offer 5; Gold Run, 6s. to 8s.; Port Phillip, 9s. to 11s.; Chapel House Colliery, 1½ to 2; Newport, Abercrom, 3½ to 4½.

FREDERICK K. KIRK.

GENERAL MARKETS.—Markets generally have been dull throughout the week, and business very limited. With regard to foreign stocks the principal dealing has been in Egyptians and Turks. Egyptians keep firm. Turkish stocks were flat on the public announcement of the failure of the De Yacouville scheme, although this was pretty well foreseen, but are now firm, and I fancy are worth "looking up" for a time, on the chance of a commission being appointed for the reorganisation of their finances. Turkey must have money, and will accept any terms in order to get it. Oriental Bank shares have been as low as 17½ this week, the fact of dividends being paid, and the severe losses made by the bank, being worse than we expected. English railways for the most part are lower. North British have fallen from 3 to 4 per cent.; the traffic returns were rather more favourable in some cases, though very bad in others. Great Eastern shows a good increase, the stock also keeps very firm, and I shall expect to see it much higher before long. American railways are lower, on the prospect of dearer money in New York, which would naturally put a check on the enormous speculative operations which have been going on in them for some time. Consols and Govern-

ment funds keep very firm. The mine market opened dull, but leaves off firm, and tin mines have become in demand, and at better prices. Lead shares are also better.—W. H. H. WATSON: 1, St. Michael's-alley, Cornhill, E.C., March 28.

DEVON GREAT CONSOLS.

The Devon Great Consols miners have again made a very poor exhibition of themselves. It appears that hitherto they have had a day's holiday once in every eight weeks—the Monday following the two-monthly setting-day. This Monday as a holiday in metallic mining has for a long time been gradually dying out, and at the various mines the miners have gone to work willingly as usual at 6 A.M. The directors some three weeks ago at their meeting, at which the manager, Capt. Richards, attended, and acquiesced in the requirement that the men should go to work in the afternoon at 2 o'clock, and accordingly instructions were given to carry out the same. It was not until the setting-day came round (last Saturday) that the men declined this most reasonable request of only a very few hours extra work (on that particular day) in the course of the two months. These are surely not times for men to be dictators to their employers, and decline such a trivial request with a company struggling on for mere existence, and using every economy for this purpose. At the same time it should be remembered that the shareholders in this company have but received one very small item of dividend during the last seven years, and during that period there has been a continuous fall in the price of copper, and still greater in proportion the price of this company's copper ores, as well as arsenic, in addition to which the reserves of ores, as shown by the last year's reports, have likewise diminished. Thus it will be seen that nearly all the produce from these extensive mines for the last seven or eight years has been remitted back to Tavistock for those employed at the mines; management, royalties, merchants' accounts, and various other expenses. Who, therefore, derives the benefit? Simply all those in and around the mines and district, certainly not the present poor unfortunate shareholders, many of whom have paid enormous prices for their shares, and are not receiving a penny piece towards their support. If all their investments were like this it would indeed be a poor look out.

The men have reconsidered the matter, and gone to work again, but communications from the neighbourhood of the mine state that a very large section of the most respectable and sensible men consider that the "Maze Monday" holiday (as it is called) is a mere waste of time, which, especially in the present state of distress and depression, ought to be willingly dispensed with, and in this view alone it is to be hoped that "Maze Monday" (as it has already nearly become) will be totally extinguished. These are not the days for the indulgence of idleness in any branch of industry when there are hundreds of thousands of men anxious to work, but who cannot get even one day's work in a week. As to the question of wages at Devon Consols, it is well known that those employed by the company have always been well paid, and that, as a fact, they have in the last twelve months received the average rate of wages which have been paid at other metallic mines—over 15s. a week (eight hours a day); and that the moderate deduction from this recently made has only been equal to about one shilling per week of their wages. Thus they will receive (if they work for it) equally as good an average rate of wage as Cornwall, Devon, and other mining districts now pay. In many mines in various districts miners are known to be making not more than 10s. to 12s. 6d. a week, and they are only too thankful even to obtain this rather than go unemployed. Men, however, should endeavour (as is no doubt now generally the case) to work with renewed energy to obtain as good wages as they possibly can.

There is one important matter, however, which is greatly in favour of those whose are employed at our various metallic mines—the great reduction made in the price of bread and of provisions generally, and allowing for this they are with present rate of wages in the various mines equally as well off as they were 12 months ago.

The directors have been, if anything, most lenient in their requirement in stipulating that the men should go to the mines to work in the afternoon at 2 o'clock (the second shift), for there is nothing that can be seen why they should not commence at the first shift—at 6 A.M. In answer to this it may be said they require some two or three hours to arrange as to their working tools. All this could easily be done on the Saturday. There is an old adage, "Where there's a will there's a way," and, as has been said before in these depressed times mining companies should not only request, but that men should willingly back up their employers in rendering them every assistance with a willing disposition. The good old times may again come round when those employed who in days of adversity showed a proper spirit will assuredly in days of prosperity not be forgotten.

THE PRODUCTION OF STEEL FROM OOLITIC ORES.

In the *Mining Journal* of Feb. 1 a notice was published of the invention of the late Mr. Perry Downing, of Newcastle-on-Tyne, and the confident claim that was made to his having accomplished the long desired method of producing steel from Cleveland ores, and other ores of a similar character. It is now announced that Messrs. Bolckow and Vaughan have also been successful in their long continued efforts in the same direction. The results are said to exceed expectations, and it is claimed that the discovery will enable Cleveland, which has long produced the cheapest pig-iron in the world, to make steel at prices equally beyond the reach of competition. When it is borne in mind how steel has already supplanted iron for rails, for bridges, even for shipbuilding, and for all minor purposes, it will be at once seen what an important bearing this discovery is likely to have upon the trade of the district. It may, and probably will, make Cleveland as remarkable for its supremacy in manufactured steel as it now is for its pig-iron. In the latter the out-turn of last year, in spite of the extreme depression of trade, has only twice previously been exceeded, and then only by a few thousand tons. At the present time it is stated that pig-iron can be made there for some 10s. per ton less than it costs to produce in Scotland, and no foreign country can approach Cleveland in lowness of cost of production. Naturally, therefore, it is expected that fresh life will forthwith be infused into the coal and iron industries of the North of England, which are even now, according to the latest trade reports, beginning to give signs of renewed activity. Part of the depression which has of late years overtaken the iron trade of the world has been due, it should never be forgotten, to the fact that we are now in a period of transition. Steel has been supplanting iron, and in doing so has caused serious derangement, much stagnation, and great losses. Should this discovery yield all that Messrs. Bolckow, Vaughan, and Co. claim for it, and they seem satisfied on that point, the new facilities for producing cheap steel thus acquired can hardly fail to stimulate business.

The success at Middlesbrough appears to have resulted entirely from minute attention to details. The Bessemer process has been

adhered to, but there have been very considerable difficulties with regard to the linings of the converter. Upon this point, however, the Middleborough correspondent of the Times writes that it has been confidently believed since October last that Mr. Thomas would make the lining of the converter all that was required, and it is now stated that he has gained the long-desired object. Even now Messrs. Bolckow, Vaughan, and Co. own the finest steelworks in the world at Eston, near Middleborough, and by the use of foreign ore produce 2000 tons of steel rails every week. By the new process they will be able to make steel from Cleveland iron solely. When it is considered that Cleveland is not only by far the largest but the cheapest iron-making district it will readily be believed that there is a bright early future for this great centre of industry. Messrs. Bolckow, Vaughan, and Co. have bought the South Bank blast furnaces at Eston, which were the property of Thomas Vaughan and Co.

Thus it may be confidently asserted that the long sought for method of making steel from the cheap ores of Cleveland has been successfully achieved. This method is, it is confidently believed, applicable to the cheap ores of Northamptonshire and Lincolnshire also. It is, perhaps, somewhat early to speculate as to what the ultimate result of these discoveries may be on the future of the steel and iron trades of this country, but it may safely be predicted that a most important change must take place; whether, as some anticipate, the bulk of the trade will at once be thrown into the hands of the colliery smelters, to the almost extinction of the hematite trade of North Lancashire and Cumberland, or whether by reducing their prices the red hematite makers will be able to hold their own, remains to be seen. It is not too much to say, however, that a great fact has been accomplished, and that its effect on the manufacture of steel in this country, and possibly on the general trade resulting therefrom, will speedily make itself felt.

Original Correspondence.

WHEEL GRENVILLE.

SIR,—In my former letters I expressed a very decided opinion upon the management and prospects of this mine, and I think any unprejudiced person, after reading the report of the late meeting, must admit that my views were correct. I advised the adventurers not to indulge in any sanguine hopes as to the effect of the junction of the old lode with the South Condurow lode at the western and northern shafts, and I gave reasons for my advice. The management had led the adventurers to expect great things at these junctions, and unless I am much mistaken the new 80-inch engine was placed where it stands mainly to develop them, but I did not share in these views, and condemned the placing of the engine at the northern shaft, and prognosticated that both junctions of the lodes would prove failures. The erection of the engine must now appear a palpable and costly mistake. No. 1 junction has evidently proved a failure, and No. 2 (although the agents say they are confident that when it is reached a great and lasting bunch of tin will be the result) I am still of opinion will also be a disappointment. The agents, and, indeed, the whole of the present management, have all along exhibited strong confidence in their own views and judgment, but I have yet to discover that in one single instance have those views and judgment been confirmed. I was a shareholder under the former management, and knew the old agents well, and it is owing to my frequent conversations with them about the mine (for I always take care to make myself thoroughly acquainted as far as I can with the features of any mine I adventure in) that I have been able to speak so confidently of the past of Wheel Grenville, and to give an opinion as to its future. Whilst I was a shareholder I received a circular from a certain person telling me that I possessed a good property, but that it was badly managed. Now, I happened to know a good deal more about the mine than the party did who volunteered this information to me, and as far as the management was concerned I certainly did not agree with him. On the contrary, if ever a mine was honestly and judiciously managed that mine was Wheel Grenville under the former agency. If that agency had never been displaced I do not hesitate to say that the condition and position of the mine would be very different to what it is at the present moment. The new management have called up, including the call just made, nearly 30,000*l.*, and I think it cannot be disputed that the underground state of the mine is not now so good as it was when the old agents were discharged. As I said, I did not agree with the party who spoke so positively as to mismanagement, and I voted in favour of the then agents. When I found that the majority of my brother-shareholders shared in the view that the property was not being properly worked, and discharged their old servants, and handed the management of the mine over to a London committee, I thought it time to be quit of the mine, and I disposed of my interest in it. I must admit that as far as the surface goes the mine shows greater activity has been exercised in the erection of powerful machinery and extensive and expensive dressing appliances than under the former parties, but what is the good of large dressing-floors if there be not sufficient mineral to keep them at work? They do not constitute a mine, nor prove the wealth underground; they simply appear as a monument of reckless management and want of judgment.

It is to the underground department we must look for the test of good management, and here, as I said before, we shall find no improvement, but, on the contrary, a material falling off. And yet the adventurers have been led meeting after meeting to believe that all that was wanted to enable the mine to make large returns were extensive machinery and dressing-floors. I have read of 30 tons of tin per month as being the minimum quantity that might be expected if the committee's views and recommendations were carried out. Only in December last I saw it reported in your Journal that 23 tons of tin per month would be the produce for the ensuing quarter. The sales for the three months amounted to 40 tons only, or 29 tons less than was confidently promised. Ought not an executive that had so much to say in condemnation of the former agents to exhibit a sounder judgment than is here displayed. I am not a shareholder now, but if I were I should certainly enquire how it was that my property which three and a half years ago I was told was a valuable one but mismanaged, nevertheless stood then at a market value of 18,000*l.*, and how it is that although 27,000*l.* have since been spent upon that property under assumed good management, it stands at the present moment at a value of about 12,000*l.* only? However, this concerns the adventurers only; if they choose to be credulous and confiding to a limit surpassing the belief of a cautious man it is no affair of Peter Provis's.

My chief object in now writing you is to make a few remarks upon what the management propose to do for the future. The agents tell us that shortly after the last general meeting all the tut-work stopes in the western ground fell off in value, which compelled the agents to work the ground on tribute. You will mark that shortly after the adventurers had been assured that the state of the mine was such that the returns of tin for the past quarter would be nearly 70 tons, the stopes fell off in value, and the returns for the three months were 40 tons only. The agents now tell us that they never held out so much hope about this ground as many others did. I was under the impression that it was to work this very western ground that the adventurers were induced to go to the heavy expense for machinery, &c. Your readers will remember that we were months ago told that in this ground the old agents, who had so mismanaged the mine, left thousands and tens of thousands of tons of tinstuff standing; in fact, five years of resources had been laid open by these sadly incompetent agents. In less than three years this ground falls, becomes too poor to work at the adventurers' risk, and has been set to tribute. Will the agents tell us what wages the majority of the tributers will probably earn? I doubt if they will average 35*s.* per man per month, and if my calculation prove correct, how long can even this tribute system be expected to last?

This western ground, to work which thousands of pounds have been lavishly spent, having failed, the adventurers' attention is now, with the same unabated confidence which characterises the present management, directed to No. 2 junction at Gould's shaft, and to

the development of the eastern ground. With regard to the junction will the agents point out to me what there is to justify their confidence that at the junction a great and lasting bunch of tin will be the result? Neither the flat lode nor the old lode has ever been so promising at this point as they were in the locality of the western shaft, and as the junction there was a failure what these confident agents can see about Gould's shaft to warrant a different result I am at a loss to imagine. To explore the eastern ground it has been decided to employ boring machinery. It is thought this is an excellent plan to adopt, as probably it will be for the contractor. As I understand it the object in thus working this ground is to get as speedily as possible under the rich bunches of tin in South Condurow. It is, however, evident to me the present parties know very little about this eastern ground. Has it ever occurred to them that every fathom they drive in that direction they will be going away from the South Condurow deposits? And has it further occurred to them that 50 or 60 fathoms east of Gould's shaft there is a cross-course which destroyed the old tin lode that was formerly so productive, and which cross-course may also have a similar effect upon the flat lode? Even if there were not this all-important cross-course to be considered it should be borne in mind that the rich bunches of tin in South Condurow are made by droppers or feeders falling into the lode. There are no droppers or feeders in the eastern ground at Wheel Grenville. Another matter should also be remembered—the large engine is erected in the wrong place to command the whole of this eastern ground, and in all probability another shaft will have to be sunk and may be another engine erected as the levels are extended eastward. With these contingencies, and the fact that in this ground there are none of the features which make South Condurow so productive, I cannot see anything to justify a lavish expenditure in this direction. No one acquainted with the ups and downs of mining would be so imprudent as to assert in positive terms there is no hope whatever in the eastern ground. I should hold such a feeling equally as faulty as that of a person who speaks confidently of success simply because he wishes for it, and devoid of reliable judgment leads shareholders into unjustifiable expenditure and disastrous losses. In my opinion, for which I give my reasons, the chances are against a successful issue to the contemplated operations in the eastern ground at Wheel Grenville. The shareholders have before them the result of all the promises and hopes held out to them in reference to the western ground. Months ago I warned them those hopes and promises were not likely to be realised, and after this they should exercise a little more caution and discretion in regard to future operations.—*Camborne, March 28.*

PETER PROVIS.

[For remainder of Original Correspondence, see to-day's Supplement.]

ALMADA AND TIRITO CONSOLIDATED SILVER MINING COMPANY (LIMITED).

DIOS PADRE.—Capt. N. C. Morcom, Jan. 27: The stopes we have just started in the back of tunnel level contains some exceedingly rich stones of green ore and petanque. The water coming down from the back of the tunnel at this point led me to have a few shafts put in, in order to see if any ore could be found. After the first few blasts were put in a little ore appeared, which has continued to improve. We shall shortly know whether it be anything of importance or otherwise.

Feb. 3: The result of the past week's work has been very disappointing. The back of the tunnel, or rather the stopes, contains but very little ore; when last reported it had a very kindly appearance, showing the very fluctuating character of the lode.

MINA GRANDE.—Jan. 13: The winze sinking from tunnel level, which is situated over the big black stopes, is worth 40 tons of ore per fathom. The stopes in the back of the black ore stopes is also worth 40 tons per cubic fathom.

Jan. 27: The winze sinking below the tunnel level is communicated to the big black ore stopes. It has a depth of 30 ft., and has been very productive of good black ore. The big black ore stopes is just as usual, yielding large quantities of mineral.

Feb. 3: The big black ore stopes below tunnel level continues to yield a fair quantity of metal.

CRUZ YERDE.—Jan. 13: Little was done in sinking the shaft last week, the timbermen being employed fixing tackle, and securing the shaft. We hope to make good progress sinking in future. The old driving north is now valueless, but I do not anticipate that it will remain poor for any length of time. It is probably only a poor bar of ground of short duration. The stopes in back of the above named level has fallen off a little in value. We shall, we fear, soon knock into old workings.

Jan. 27: The shaft has struck old workings. No. 1 level north is valueless at present. The stopes in the back of the above level is much poorer than usual.

Feb. 3: The old workings continue to make down with the shaft. In the whole ground in the shaft there are some stones of green ore. The end driving north is become more ore.

LA VIRGEN.—Jan. 13: The part of the lode which has been taken down is poorer than usual; its present appearance is anything but encouraging. The east part of the lode is now being taken down; this has a better aspect than formerly, and may perhaps become in future the main part of the lode, at least we hope so, otherwise this stopes will soon have a bad name.

Jan. 27: The stopes in the back of tunnel level has become poor. The ground excavated in the last stop of 6 ft. high is now being filled up with debris, as we are not safe in leaving the ground open for a greater height. We have communicated the present stopes with the old black Virgen. I was very agreeably surprised to find such a productive lode left by the late workers; no time shall be lost in making preparations to extract the lode. I hope soon to have the opportunity of seeing still further some of the old stopes left when the mine was in bonanza, which possibly we shall be glad to rework, and I think to our profit.

Feb. 3: Stopping has again been resumed; the lode is less valuable. According to indications the green ore part of the lode will soon be taken away, as it is cut off in the rise above by a cross-head; it may, however, make again in height, unless this is the point where the lode makes the division, which I am led to believe, judging from present appearances.

LA PROVIDENCIA.—Jan. 27: Some parts of the lode in this stopes are very productive of doolie ore; the lode is very large, and considerably mixed with quartz and country rock. There are no signs yet of the old workings further encouraging us.

Feb. 3: The big green ore stopes is producing less ore than formerly. SAN PEDRO.—Jan. 13: The filling up of the old excavations from the old workings has been a little difficult, and attended at times with considerable risk. The stopes are poor at present, and gave us but little ore during the past week. There appears to be a fine back standing high above us, which we shall be able to take away when the place is made secure.

Jan. 27: We have recently cleared into this old stopes, which has been idle and filled with rubbish for years. I am pleased to say the lode presents a very encouraging appearance. We shall at once put up a rise to it from tunnel level, which will serve as a prop, and also ventilate the workings. I think we may venture to hope that this stopes will be of great service to us; its situation is everything that could be desired, being in the midst of former riches.

Feb. 3: Fair progress is being made in the rise towards this stopes. TIRITO.—Jan. 27: FIRST LODE: The south end of the winze is being taken away. It is fairly productive of green and red ore.

Feb. 3: The end driving south of winze has some very good stones of green ore, but is not as good as we anticipated, the level above and the winze being more productive.

TRIBUTO DEPARTAMENTO.—Jan. 13: In this department a very perceptible falling off has taken place. This we need not be surprised at, as the pitches are chiefly old sides, arches, and pillars. Although the green ore stopes appear to be getting less and poorer we have a pretty good quantity of black ore discovered, the amount of which I will shortly send you.

BURBOS ON DUMPS.—J. H. Clemes, Jan. 18: The 28 oz. smalls are sent to furnace direct. They contain argenteous grey ore. The loss on stamping these ores to buddles would be very large—33 per cent. to 40 per cent. Trial pits are being sunk to ascertain the quantity of these select tieras. It is not large, 1000 tons having been worked. The main dumps (16 to 18 oz.) are not being touched; firewood purchases obliging us to run on rock of better grade than this, more money producing. The results of various buddles stamped from here have been fair; the difficulty about making an estimate of the quantity is that the shape of the hill on whose face the smalls lie is not known. Capt. Morcom is now taking measurements, weight per cubic foot, for giving you the nearest approach possible to the amount. The present stamping appliances here can extract from the general big dump 6 tons of buddled heads per day. To obtain this amount of concentration 45 tons of mineral would have to be pulverised. All the old men here say that bands of good black ore occur here and there in the dumps, which were rebellious for the ancient beneficias; these bands, however, are rich in galena. Our crusher (a very antiquated one) will pulverise practically only to 0.08 in. mesh; since the date of your letter you will have learnt from here that the black ores are now being stamped wet; the increased fineness enables us to put eight charges per day through the furnaces instead of five. We have built a small drying apparatus, but must still erect more, after which the furnace output will be increased. At the first sign of a permanent improvement in the Mina Grande I shall be the first to recommend the purchase of some modern appliances for treating the black ores. The present hacienda is behind the time (say) about 20 years.

SELECT SMALLS FROM MINA GRANDE DUMP.—Jan. 23: The following have been crushed and sent without dressing to furnaces up to the 31st ult.—1225 tons, costing at hacienda \$1317.00, an average assay may be called \$25. We have, therefore, 1225 tons at \$25, \$30,650; freight paid, \$1318; beneficio losses, \$6743 at 22 per cent.; beneficio charges, \$7356 at \$5 per ton; total charges, \$15,417, equal to \$15,233; profit, \$12,47 per ton. The belts of select smalls are getting so thin at surface that on Monday next a gang of labourers will be put to cut two trenches from the outer surface of the dump towards its centre to explore for other good spots; these cuttings will also help to solve the problem as to the payability of putting the whole dump after a rough screening to buddles. They will be pushed as fast as our means allow. Underground, as you will see by Capt. Morcom's report, there has been but little change during the past week. A new rise is about to be started from the tunnel level to the San Pedro stopes; this communication is indispensable, both for purposes of ventilation and of ore extraction. The ore coming out from underground during the past week are somewhat improved. Assays have been very numerous, on account of the large number of tributers' piles. An average of tributers' first-class green is about 50 ozs. The last five

tortas put out 54.69 ozs.; an average sample of black and red ores, &c., stamped into tanks for furnaces, 61.25 ozs. The last week's run of precipitate produced \$1680, the proportions having been—Tieras crushed, 5 parts; stamped ores dried, 1 part. The drying apparatus being insufficient we are this week running on the following mixture—Smalls select, 3 parts; crushed black ores, 2 parts; stamped black ores, 1 part. The drying arrangements will be slowly added to. Every effort will be made to keep up the present output from furnaces.

Feb. 7.—Underground: Nothing has been done at or below the 12, in Mina Grande. We break quite sufficient black ore for present requirements from the workings under tunnel level. A lull in the wood purchases will enable us to push the 15 workings. The ore chamber immediately under tunnel level is capable of yielding a large quantity of fair black ore. The Virgen stopes still shows a green branch west, and a branch of black ore east, with a thin stratum of worthless material between the two. The green vein is unremunerative at present. The black ore lode is rather thin and dredgy, but we must take into account that this is Tiritito and not Mina Grande black ore—i.e., the ley is good. Further south a communication has been opened into the old Virgen black ore. The ventilation is now excellent, there being fanes, workings, &c., from the old Virgen to Purisima, and thence to surface. The ground here has to be worked with some degree of caution, the hanging-wall being weak. The old Virgen stopes show favourably, and with our beneficio facilities will leave a good margin of profit, although when it was in times past shut down budding expenses, losses, and heavy freights did not allow its being worked by a fortnight's run at this place, account of expenses being kept, and the resulting buddle heads being kept apart.

As regards the continuity of the Virgen, my opinion for years has been that it is a blind lode. You will remember the gradual extinction of payable ground in the Purisima. Then, again, the green ore part of the same Virgen (further south) steadily impoverished as it left the tunnel level, and finally had to be abandoned; moreover, a cross-cut from the old Purisima footway, marked 18 on working plan, intersected the Virgen without result. This latter point, however, although unfavourable, is not condemnatory, because it was probably too far south, although a few fathoms underneath this cross-cut we have a fine black ore stopes. The dip of the black ore lode is apparently south. The most valuable part of the Virgen was just above tunnel level; from that point its width value diminished both upwards and downwards. The lower apex of the bunch is at the 10. The main Providencia stopes is not looking quite so well as a few weeks ago; too much weight must not, however, be placed on this, as the huge lode in this part of the property has always presented a series of poor streaks and bonanzas.

CRUZ YERDE.—I have not seen this place for a long time. You will see by working plan that this mine has somewhat fallen off of late. The ore samples give low results. The tributer is not now doing more than clear expenses, and the hacienda will probably have to raise his price. As regards the shaft old men's workings have been reached. I really have no means of knowing whether these old workings were the following of the same branch or workings in the main Mina Grande Mine. We still continue sinking.

BURBOS.—1. Select Sierras for Direct Beneficio: These smalls are as usual being crushed direct for furnaces in roll-crusher. On the completion of an extension of present drying apparatus now in hand more ore and less smalls will be used. The present band of these smalls showing signs of coming to an end a hole is being opened to find another. All tradition says the dump contains many such belts.

2. Burrow in the Rough for Buddling: One major-domo and six Indians are opening two exploratory trenches; we shall stamp a buddle full and advise result next week. Too much must not be expected from the outer circumference of the dumps. On the completion of our drying facilities and sifting apparatus I hope to increase furnace output. We now average 1300 troy ounces fine silver per week from 30 oz. rock. It must be kept in mind that the bulk of the dumps need concentration before going to furnaces.

The directors received from Mr. J. H. Clemes the following telegram, dated Feb. 7, on Feb. 27: We have remitted you ore and bullion, \$5500.

REMOVING AIR FROM WATER PIPES.

The apparatus invented by Mr. TRUBENBACH, of Chemnitz, and which is fitted at suitable parts of a water-pipe or other water conduit, consists of a vertical cast-iron hollow cylinder, or casing, fitted with a cover at top, and provided at bottom with a flange to permit of its being bolted or screwed on a corresponding flange on the pipe or other conduit. An aperture lined with a metal socket is contrived in the cover in order to allow the air which enters this cylinder to escape therefrom. Inside this cylinder is placed a second cylinder, but made of tin. It is open at its lower end, and rests when in its lowest position on a convex plate, or support, fitted in the lower end of the outer cylinder or casing. This inner cylinder, which is closed at the upper end, is furnished with an india-rubber washer or disc, in order to close hermetically the aperture of the outer cylinder, when the inner one, owing to the pressure of air, is forced to rise and come against it, and at the same time prevent the escape of the water in the outer cylinder. The inner cylinder is guided in its up and down movement by wings or ribs formed on the inner face of the outer cylinder. The water flowing out of the pipe or conduit into the outer cylinder rises therein, and the air becomes compressed in the upper part thereof, the same also taking place in the inner cylinder, dipping in the water in the outer cylinder, and as the water lifts it the india-rubber washer closes the aperture in the outer cylinder. Thus the water in the space between the cylinders will naturally enter from below, and afterwards rise more easily than in the interior of the inner cylinder; so also will a greater volume of air become compressed above in this intervening space than in the inner cylinder, consequently the level of the water in the intervening space will be lower than the inner cylinder. The lifting pressure in the inner cylinder, which causes the same to rise, becomes reduced, and the inner cylinder will in consequence of its weight sink until it rests upon the convex plate or support, fitted in the lower part of the outer cylinder, and the aperture becoming for a short time free, the compressed air found in the intervening space will flow out with an extra pressure of several atmospheres above the outside atmospheric air, and when the surfaces of water in the inner and outer cylinders reaches the same level the inner cylinder will again be closed, and so on.

The weight of the inner cylinder, as well as the aperture in the outer cylinder, must vary according to the pressure of the air, and the size of the pipe to which the apparatus is to be applied.

FRANCIS & JENKINS, GREENFIELD WORKS, LLANELLY, S. WALES,

MANUFACTURERS OF THE

Improved Solid Steel Shovels, C. S. Forks, Solid Steel Miners' Shovels, Railway and Miners' Picks, Steel-pointed Spades and Shovels, Draining and Grafting Tools, &c.

ALSO MANUFACTURERS OF

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REFERENCES.

In England—The London Mining Journal, and leading Cornishmen. In California—The Mining and Scientific Press, and principal Miners.

Mining Correspondence.

BRITISH MINES.

ABERLYN.—John Roberts, March 26: We have communicated the winze from the No. 1 to the No. 2 level, and these men are now opening the lode in the roof in the back of the No. 2 at the bottom of the winze. We have cut through the blende part of the lode from the cross-cut to the south end, and as soon as we have cleared away the stuff from the bottom of the rise at the No. 3, which will be, perhaps, three or four days, we shall commence cutting through the lode in the bottom of the No. 2, thus making a slope in the bottom to work from the rise between this and the No. 3. We have during the past month cut through the lode on the north side of the cross-cut about 2 fms. in length, making 3 cubic fathoms, which has yielded about 12 tons of blende and some nice lead ore. This is let again to four men, at 10¢ per lineal fathom. We have driven in the north end about 2 fms.; the lode is quite as good as I have ever reported. Indeed the men say that they never saw it looking so well before. I should say that the 2 fms. driving has yielded from 8 to 10 tons of blende. This is let to four men, at 10¢ per fathom. Altogether the lode is now 14 ft. wide, and worth from 10 to 14 tons of blende per fathom. As neither of the branches of the level has been driven far enough to get to the run of blende ground I would recommend driving one on this course, to intersect the lead or blende, as the case may be, at that level. At surface we have made a double set of jiggers, which are nearly complete, erected the 12-ft. water-wheel, and gearing for driving them, completed the large water-wheel, and well rendered it with a coat of pitch and tar; made all the launders, and shall finish erecting them in about seven or eight days; made and walled around the place or pit for the round buddles. If nothing unforeseen occurs we shall be able to start the machinery against your next monthly meeting.

BEDFORD UNITED.—R. Goldsworthy, March 27: The lode in the 150 east has been taken down, and so far as seen is worth 9¢ per fathom, judging from the ore ground driven through in the level above. I believe as the end is extended it will lay open a valuable piece of ground. The lode in the 158 east is again improving, and is now worth 6¢ per fathom. The lode in the 127 east is worth 9¢ per fathom, and from its promising appearance I expect a further improvement. The stopes are producing their usual quantity of ore, and are worth on an average 7¢ per fathom.

BELL VEAN.—John Brokenshire, March 27: The new lode has much improved since you were here on Friday last, both in size and value. We are making good progress in driving west on its course, and we are taking out of the lode splendid rich rocks of tin. I have dialled the lode and cross cut it, and find its course is due east and west. I will send you a full report next week, as by that time we shall be in a better position to state its value. The samples you took and washed, &c., would show the lode to be worth about 5¢ per fathom.

BETWY-COED.—H. T. Haley, March 26: The lode in the 20 going east presents a very nice appearance, and is composed of spar, blende, and lead ore, to the value of 15 cwt. per fathom. In the cross cut going south, in the depth of the lode we have intersected a good-looking branch, 1 ft. wide, with stones of lead in it, but I think the main part is further south still. The rise in the back of this level is without change since last week. We are getting on well with all the surface work, but the severe frost for the last three or four days has been rather against us on the floors, &c.

BLAEN CAELAN UNITED.—J. Pell, March 27: The 30 fm. level is making good progress from the engine-shaft towards the winze; the ground continues hard, but we have made a good deal of it this week. We have made a commencement on the floors, but the last few days it has been quite winterly, and is not suitable for outdoor work. We have a good supply of water power for both pumping and crushing and driving the new dressing machinery.

BLUE HILLS.—S. Bennett, P. Vian, March 22: There has been no lode taken down in the 30 east during the past week, consequently there is no change to notice here. Two stopes in the back of this level are worth respectively 8¢ and 14¢ per fathom.

BODIDRIS.—H. Hotchkiss, March 22: Our operations are progressing with regularity and fairly rapid speed at each point, but I have no important change to report. The lode in the 45 east is equally promising as last week. The lode in the engine-shaft sinking below this level is somewhat improved for specimens of lead and blende, but the ground is hard.

—March 25: Mary-Poll Lode: The rise in the back of the 40 upon this lode (which at this point is 19 ft. wide) has much improved in appearance this last day or two, and our prospects are very cheering. The stuff being now broken is saved for the washing floors, as it contains more lead. I am looking forward to something very good here.

BWLCE UNITED.—N. Bray, March 26: The very severe frost has again interfered with the regular working of our pumping wheel, and the sinking of the shaft below the 90; but I hope a change for the better will soon take place. The lode in the rise in the back of the 70 is of good width, and yielding saving work for dressing; but I look forward to an improvement shortly, as we shall soon get into the productive run of ore ground.

CENTRAL FOXDALE.—W. T. Harris, March 22: Engine-shaft: The lode in the 120 east is 4 ft. wide; the same character as for some time past, quartz, sulphur, and good lead ore, and good stones of lead ore. Good progress is being made in extending this level forward. The lode in the 108 east is from 6 to 9 ft. wide, and the portion carried is producing 1½ ton of lead ore per fathom. The stopes in the roof of this level are worth 1½ ton per cubic fathom. The lode in the winze sinking below this level has rather improved, and is now yielding 1½ ton of lead ore per fathom. At the cross-cut driving south we have cut into a strong joint, at present producing saving work, and promising for an improvement. The 90 east in the winze sinking below this level is worth 1 ton of lead ore per fathom, and improving. This is encouraging for the 105, as it is evidence of a continuous run of ore. The pitch in the back of the 90 is producing 10 cwt. of lead ore per fathom. The pitch in the back of the 74 west is producing 12 cwt. of lead ore per fathom. No. 2 pitch, in the same level, is worth 10 cwt. of lead ore per fathom. The pitch in the back of this level, on south lode, is worth 6 cwt. of lead ore per fathom. The 55 pitch in back, on center lode, is worth 8 cwt. per fathom, and the pitch on branch is producing 10 cwt. of lead ore per fathom. No other change to report. I am anxiously waiting for an improvement in the 120 east, there being a good lode in the winze above, also a long run of ore ground gone down in the sole of the level.

CLIMBEN.—W. S. Sandoe, John Roberts, March 26: The erection of the 60-ft. wheel progresses satisfactorily, the arms are all fixed in their places in two days at the most. The other work also in connection therewith is being carried on vigorously. We have hooked on the second lift below the 15, and shall drain the mine as soon as possible, but in the meantime we shall be sending down and fixing the pumps from the day level to the 15, and so urge on to completion as soon as we can.

COMBARTIN.—T. Harris, J. Comer, March 22: In the north-west adit end, on the counter lode, the lode is from 5 to 8 ft. wide, of a most promising character, and we have a leader in the lode about 9 in. wide, producing good stones of strong-looking lead ore for about 18 in. high from the bottom of the level, and it is still rising, and we hope soon to have the pleasure of reporting a value, as we are confident this level is going over a run of good lead ground. The adit end east, on the new east and west lode, has just touched the center lode spoken of in our report for the general meeting, but there is not enough of it seen to report any change, but we hope to do so in a few days. The adit cross-cut is in much the same kind of ground as for two or three weeks past, but letting out much more water, which leads us to think we are nearing another lode.

Thos. May, March 25: But little or no change in the ground in our adit level since our report last week. Ground still of a blue killas.

CWMYSTWTH.—March 26: Every effort is being made to push forward the 15 fm. level cross-cut at Pugh's engine-shaft towards the new lode; the ground still continues favourable, and good progress is being made. In Gill's upper level cross-cut north we are still meeting with branches crossing the forebrest, but of no value. In No. 1 winze the lode is very much changed for the better since we passed through the hard and poor bar of ground between the pipes of lead. We now have our own pipe in the winze, which is producing 1½ ton of lead ore per fathom. The air-compressor pipes are now connected to commence sinking by rock-drill, but owing to the severe frost, which has again set in, and stopped our water-engine, we are now obliged to continue the sinking by hand labour. The lode in No. 2 winze is poor for lead, hard, and spare for sinking, composed of a very dark spar and blende for the whole width of the winze. The lode in the stopes, over Gill's upper level, is 3 ft. wide, worth 1 ton of lead ore per fathom. The three stopes, over Mitchell's level, on the new lode, also the stopes over Level-fawr on the copper lode, are producing their usual quantities of lead ore, and are looking encouraging. All our tribute pitches are without any change. The dressing department during the past week has been very much interfered with by the severe frost, and all our machinery is now at a standstill.

DE BROKE.—J. Phillips, March 26: A return of very stormy weather with hard frost has stopped the wheels, and prevents driving at the 55, but at this time of the year we may expect warmer weather soon. The lode in the stopes, east and west of winze below the 25, is 6 ft. wide, and producing about 18 cwt. of lead ore per fathom. The stopes in the 25 east is producing from 20 to 25 cwt. per fathom—lode 3 ft. wide. The tribute pitch and other points underground are without change to report.

D'ERESBY CONSOLS.—John Roberts, William Sandoe, March 26: The end driving west towards the Cobler's lode has been driven during the past month a little over 3 fathoms; price given, 10¢ a fathom. From the change which has lately taken place in the end we are of the opinion that we are now getting near to the Cobler's lode. The footwall of the lode on which we are now driving has all along shown an underlay of about 2½ ft. in a fathom, but is now nearly perpendicular; also from the top to the bottom of the end the ground is now very wet, and to-day we broke some of the lode containing very good spots of lead ore, so from these things we expect a change soon. Present price given is 9¢ per fathom, and the progress made we consider to be very satisfactory.

D'ERESBY MOUNTAIN.—W. Sandoe, J. Roberts, March 26: In No. 1 adit, driving south, the lode maintains the same kindly and cheering appearance as last week, being the whole width of the end, and all saving work for lead and blende, and being very wet all over the end we expect we are getting near to some thing better. In No. 2 adit the progress in driving is rather better, but the appearance of the lode about the same as last week. The sump in the bottom of this (No. 2) level has been cleared up to the bottom, and there is a nice lode in the bottom of this sump; the men are breaking some good ore stuff daily, and from appearance we expect to have a good piece of stopping ground here, and which can be worked most conveniently when we communicate with No. 3 rise, and this will be accomplished we hope by the end of the present month. In the rise in the back of No. 3 adit the lode is without any change to notice, keeping just as it was last week; the progress is very fair, considering the closeness of the place, hard nature of the ground, &c. In No. 8 adit we are still making good progress with clearing; we have cleared 5 fathoms or more, and have gotten on with the shafting and other connections to the small steam-engine, for the purpose of winding and pumping as fast as we possibly can, and as far as we can now see hope to be ready for working by the end of next week. The stuff from No. 4 stopes begins to show better. The dressing, &c., goes on with regularity, and has our best attention.

DEVON GREAT CONSOLS.—Isaac Richards, March 27: Wheel Emma: Inclined Shaft: During the last two months the 137 east, west of Friend's cross-cut, has been driven 4 fms. 0 ft. 11 in.; the lode part varied varying 1½ to 2½ feet wide, consisting of copper, quartz, and a little of both munda and copper ore. This drive is now being carried by the aid of the lode for more speedy progress. The 47 west has been driven 11 fms. 0 ft. 5 in.; the lode part varied varying 1½ to 2½ feet wide, consisting of copper, quartz, and a little of both munda and copper ore. This drive is now being carried by the aid of the lode for more speedy progress.

to 5 ft. wide, and worth on an average 2 tons of copper ore, or 6¢, and 4 tons munda per fathom. The present value is 3 tons of copper ore and 5 tons of munda per fathom. New Shaft, New South Lode: The new shaft has been sunk 5 fms. 2 ft. 4 in. on the north side of the lode, making a total depth below the 190 fm. level of 45 fms. 4 ft. 4 in. At about 8 ft. above the deepest point reached a cross-cut will now be put out south for the intersection of the lode, and judging from its fine appearance in the level above—the 175—it may fairly be calculated upon that it will be found good here also. The 190 east has been extended 3 fms. 4 ft. 9 in.; the lode part carried 5 ft. wide, proving worth, on an average, 6 tons of copper ore, or 20¢, and 7 tons of munda per fathom. Its present value is 4 tons of copper ore and 5 tons of munda per fathom. The 190 west has been extended 4 fms.; the lode for the width carried—5 ft.—averaging 2 tons of copper ore, or 6¢, and 8 tons of munda per fathom. Its present value is 1 ton of copper ore and 8 tons of munda per fathom. Hockaday's winze, in the bottom of the 190 west, has been sunk 2 fms. 3 ft. 6 in.; the lode for the part carried—5 ft. wide—proving for this depth worth for length of winze—9 ft.—4 tons of copper ore, or 12¢, and 6 tons munda per fathom. This winze has been suspended in consequence of an influx of water. The 176 has been extended west 2 fms. 5 ft. 7 in.; the lode proving worth 1, 2, 3, and 10 tons of copper ore and 4 tons of munda per fathom. It is now a very fine course of ore, worth 10 tons, or 30¢, and 4 tons munda per fathom. Hockaday's winze, in the bottom of the 176 west has been sunk 1 fm. 0 ft. 3 in., and communicated with Hockaday's rise in the back of the 190 west, 190. The lode has proved for the part carried—5 ft. wide—worth for length of winze (9 ft.) 2 tons of copper ore, or 6¢, and 3 tons of munda per fathom. This communication has very materially improved the ventilation in this part of the mine, which before was imperfect. Floyd's winze, in the bottom of the 175 east, has been sunk 2 fms. 5 ft.; the lode for the part carried—5 ft. wide—proving for length of winze (9 ft.) 6 tons of copper ore, or 18¢, and 5 tons of munda per fathom. The present value is 4 tons of copper ore and 5 tons of munda per fathom. Hockaday's rise, in the back of the 175 fathoms level west, has been put up 2 fms. 2 ft., the lode for length of rise (9 ft.) averaging 3 tons of copper ore, or 9¢, and 4 tons of munda per fathom, and at the highest point reached it is of the same value. The 130 east has been extended 2 fms. 5 ft. 9 in.; the lode proving from 2 to 3 ft. wide, composed of copper, quartz, and a small quantity of both munda and copper ore. This drive is now suspended to admit of a winze (Doney's) being sunk in the bottom for communication with the 137, west of Friend's cross cut, which when accomplished will give us good ventilation in this part of the mine. Doney's winze, above referred to, has been sunk 4 ft. 2 in. on the south side of the lode for more speedy progress. The railway shaft has been sunk 4 fms. 2 ft., making the total depth below the 160 9 fms. 4 ft. 7 in. A small portion only of the lode is now being carried (1 ft. wide), which is composed of copper, quartz, munda, and some very good quality copper ore.

EAST CRAVEN MOOR.—David Williams, March 27: The vein in the 54, east of shaft, has not been looking quite so well during the week, having gone through a bar of hard ground, but it is again opening out very satisfactorily, and I have no doubt it will in a few feet further driving resume its former value—4 tons per fathom. In the 54 west the vein is 5 ft. wide, and worth for lead ore 20 cwt. per fathom. The cross cut south from the 42, east of shaft, is in 35 fms. The vein in the 56 is 4 ft. 4 in. wide, and producing stones of ore. We have 25 tons of dressed ore in the bin.

EAST DARREN.—March 26: In the 104 cross-cut south, opposite Taylor's shaft, we have intersected No. 1 branch, and as far as cut into is a promising lode, being composed of light clay-slate, carbonate of lime, and branches of lead ore. In the 92, east of cross cut, on No. 2 branch, the lode is 1½ yard wide, yielding 10 cwt. of ore per fathom. In the 92, east of cross cut, on the south lode, the lode is 5 ft. wide, containing a little ore, but not sufficient to value. In the 92, west of cross cut, on the south lode, this lode is 3 ft. wide, yielding saving work for dressing. In the winze sinking under the 80, east of cross-cut, on the south lode, the lode is 3 ft. wide, yielding 15 cwt. of lead ore per fathom. In the 80, west of cross-cut, on the south lode, the lode is 4 ft. wide, yielding 1½ ton of lead ore per fathom. The stopes and tribute pitches are without change to notice. The machinery is being kept in good working order. Drawing and dressing of ore pushed forward; this at present is a little retarded through severe frost, but we hope to be in a position to sample 45 tons of good quality silver lead ore on Tuesday next, April 1.

EAST VAN.—Wm. Williams, March 26: We are pushing ahead the driving of the 25, and have driven now 12 fms. east of engine-shaft. Yesterday we tapped a quantity of good lead ore.

FRONGOCH J. Kito. March 24: Since the date of my last monthly report very satisfactory progress has been made both underground and at surface, and I am exceedingly glad to say that Vanghan's new shaft has been communicated between the 78 and 90, and that we have communication through the same from surface to the 142, or bottom level of the mine. This shaft is now down 8 fms. below the 142, and I hope to complete the sinking to the 154 in two months from this date. We are likewise sinking a winze below the 142 for ventilation, and which is going down through a good course of ore. We are cross-cutting the lode in the 142, and the 142, and we have good ore, but are not yet through to the full width. The same level west is being driven by a full set of men, and we expect shortly to be into a good run of ore ground, which is to be seen in the level above. We are still cross-cutting north in the 90, as we are not yet through the lode, and the tributes have very good ore almost close up to this point. Fair progress is being made in the 55 cross cut driving towards the south lode. We have now got 40 men on tribute, who are raising a good quantity of ore and making fair wages; and this number will be increased as soon as we have a proper outlet for the stuff. The new line of pump-rod has been completed and attached to the big pumping wheel, and the working of the steam engine has been suspended. The other surface works are being pushed on rapidly, and in a short time we shall have the mine, both above and below, in fair working condition.

GAWTON COPPER.—George Rowe, George Rowe, jun., March 22: The lode in the 117, west of cross-cut, is worth 9¢ per fathom, and showing a very kindly appearance for improvement. The lode in the 105, west of cross-cut, is worth 6¢ per fathom. The lode in the stopes in the bottom of the 105, west of winze, is worth 8¢ per fathom. The lode in the stopes in the bottom of the same level, east of winze, is worth 14¢ per fathom. The stopes in the back of the 105 are worth 8¢ per fathom. All other points are without change. We are busily engaged in preparing for our next sampling, which we calculate will be over 200 tons of copper ore.

GLENROY.—R. Rowe, March 25: There is a little better appearance in the shaft this week, but yet not of any value; the lode is very wide, and in the quartz part of it we have seen a little more lead and blende than for some time.

GOGINAN.—March 26: The following pitches have been set. A pitch in the bottom of the 120, 10 fms. west of Western shaft, to six men, at 135¢ per ton; lode 10 ft. wide, worth 15 cwt. of lead ore per fathom. A pitch over the 100, 10 fms. west of Taylor's shaft, to six men, at 120¢ per ton; lode here will produce 16 cwt. of ore per fathom. A pitch over the 60, 10 fms. west of Gilbertson's shaft, to four men, at 130¢ per ton, where the lode will yield 15 cwt. of ore per fathom. At surface the alme halvas have also been let at 95¢ per ton, but nothing can be done to these until a change in the weather takes place. We shall sample 29 tons of good quality silver-lead ore on Tuesday next, April 1.

GREAT RETAILACK.—T. Harris, March 24: There is no particular change in ore cutting the lode at the bottom of boundary shaft since last reported, the end still being in lodestone, and meeting with the same blende and lead ore. **GREEN HURTH.**—Wm. Vipond, March 21: The end of the 30 south on No. 1 is still yielding 10 tons of ore per fathom. The end north is worth 5 tons per fm.; in fact I see very little change in them this week so far as the produce is concerned. We are busy walling round the sump top, and making ready for fixing the winch as soon as we get it here. We shall finish the delivery of a wagon of ore (7 tons 4 cwt.) to-morrow (the second); we should have got two this week, but the snow at the beginning of the week prevented us from doing anything worth naming in the dressing-floors until Wednesday. If we have no further stop we shall send two wagons of ore this week.

GROGWINION.—John Kito, March 24: The deep adit level, on No. 3 lode, is still passing through a good course of ore, and is looking exceedingly well, particularly for deeper workings; this level is now almost immediately underneath the old eastern shaft, and we have some men clearing and repairing this shaft with a view to sinking the same, and developing the mine below the deep adit, as this appears to me to be the most economical and effective way of working the ore ground in the deeper levels. The 58, on the same lode, is also looking very well, and being as good as the deep adit is about 30 fathoms in advance of this with good lead the whole way along the roof of the level, we may expect this (the 58) end to be productive for a considerable distance. The intermediate and 58 fm. levels, on No. 4 lode, are both looking well, and more particularly the former; these levels are opening up good stopping ground, and little or nothing has been done on this lode in the shallow workings, so that it remains almost whole and untouched to the surface, being a height of something like 70 fathoms. The stopes throughout the mine are just about the same as usual, and are producing a fair quantity of ore. Since my last monthly report we have sold to Messrs. Walker, Parkes, and Co. 100 tons of lead ore, at 6½¢ per ton.

HERODSFOOT.—P. Temby, March 26: The lode in the rise over the 160 is fully 3 ft. wide, and worth 30 cwt. of rich ore per fathom for length of rise—9 ft. We have commenced to rise in the back of the 175 for the new shaft; lode 1½ ft. wide, producing a little ore, but not to value; from its character I am of opinion it will soon improve. The 190 end north is of much the same value as last reported on; worth 5 cwt. of ore per fathom. In the back of this level we have opened a new stopes; the lode is 8 ft. wide, and yielding 12 cwt. of ore per fathom; this ground is standing while to the 175. The 295 end south is worth 15 cwt. of ore per fathom; ground still hard for driving. Nos. 1, 2, and 3 stopes in the back of this level are worth on an average 15 cwt. of ore per fathom. On the whole the mine has improved, and looks very hopeful for the future, and is in much better working order. We have over 80 tons of ore dressed and ready for sale. The wire-rope works are working, and are a great improvement in drawing orestuff.

HIVERTON DOWN.—T. Richards, March 26: The tribute pitches in the back of the 120 and 110 fm. levels are without change. The lode in the back of the 45 and bottom of the 35 is not so valuable, but still a good course of ore, and worth 5 tons, or 25¢ per fathom. The branches in the deep adit are very promising, producing some rich black, grey, and yellow copper ore.

LADYWELL.—Arthur Waters, March 27: There is no material change here since my last full report. The 16 south continues to go forward in a sparry ore lode, worth from 1½ to 2 tons per fathom. Weather very severe again, ground being covered with snow.

MARKED VALLEY.—W. George, J. Stenlake, March 27: In the 90 west the lode is 1 ft. wide, producing occasional stones of ore, and of very promising appearance; ground favourable for driving. In the 10 west the lode is 3 ft. wide, composed principally of gossan, with good stones of ore. The rise in back of this level is still unproductive, but the lode is large, and good progress is being made. When sufficiently high we shall commence to drive both east and west from the same, when, judging from the working in the back of the 10 both east and west of this rise, we fully expect to open out some profitable ground. Our stopes are yielding just as estimated in our last report.

MEDLYN MOOR.—C. Rowe, J. Priak, March 27: The following is a copy of our setting on Saturday last:—The north cross-cut to drive in the 50, by eight men and three boys, at 8½¢ per fathom; 13 fathoms has been driven during the last four weeks, the whole distance driven is about 40 fathoms, we are constantly meeting with rich branches of tin, and we calculate that in two or three weeks the north lode will be met with. The cross cut to drive south in the 10, east of great cross-course, by six men, at 2½¢ per fathom; this level is now driven altogether in a south-easterly direction 11 fms. 4 ft., and we are daily expecting to meet with the lode here, as the water is coming from the breast of the end with great force, which is a true indication of the lode being near. No. 1 pitch, in back of the 20, on the 10, is worth 18¢ per fathom, at 18¢ per ton. No. 2 pitch, to a man and boy, at 18¢ per ton. No. 3 pitch, to a man and boy, at 18¢ per ton.

MELLANBAR.—John Gilbert, March 26: The lode in the 30, west of Gundry's shaft, is 2 ft. wide, and worth 1 ton of copper ore per fathom. The lode in the 40, west of shaft, is 1½ ft. wide, and worth ½ ton of ore per fathom. The lode in the 60, west of shaft, on the south part, is 3 ft. wide, and worth 3 tons of ore per fathom. The rise in the back of this level, west of shaft, is worth 15 to 20 tons of ore per fathom. The lode in the 70, west of shaft, is 3½ ft. wide, and worth 1½ ton of ore per fathom. The rise in the back of this level is worth 3 tons of ore per fathom. The lode in the 70, west of shaft, is 4 ft. wide, and worth 2½ tons of ore per fathom. The lode in the 90, west of shaft, is 4 ft. wide, and worth 1½ ton of copper ore per fathom, a little saving work for blende, and some rich stones of tin. The winze in the bottom of this level is still worth 3 tons of ore per fathom. The lode in the 100, west of shaft, is 4 ft. wide, and worth 2 tons of ore per fathom. We expect this level to improve, as it is not so far west by nearly 10 fms. as where we had the best of the lode in the level above. The lode in the 100, east of shaft, is 3 feet wide, and worth 1 ton of ore per fathom, and look promising for an improvement. Gundry's shaftmen are getting on very well with fixing the plunger lift at the 100. The column is reared up to the 90, and the plunger-pole, case, &c., were sent underground on Monday last, and to-day we are sending down the main rods, &c.—Skip-Shaft: There is no change in the 70 cross-cut south, and the men continue to make very good progress in driving. We have intersected the cross-course the 100 west of shaft; the men have cut into it about 3 ft., but are not yet through it. The cross-course is larger than it was in the level above, very sparry, and letting out a good deal of water.

MEBYNDWR.—John Kito, March 22: We have made very good progress in driving the 25 cross-cut since the date of my last monthly report, but have not yet intersected the south lode, and it is possible that we may yet have to drive from 15 to 20 fms. further to reach it. The ground, however, has much improved every way, and we have been able to reduce the cost of driving for the current month to 5¢ per fathom, and I may further add that should we intersect one of the main lodes in such favourable ground as we have at present it can scarcely fail to be profitably productive.

MINERAL CORPORATION OF GREAT BRITAIN.—William Bennetts, March 27: HAFNA AND HIGH HAFNA MINES: No. 3 Adit: The part of the lode that we are driving on is 4 ft. wide, and worth 1½ ton of blende to the fathom, with some good lead mixed with it. We have to day cut a large stream of water in the end, which may be looked upon as a very favourable feature. The rise in the back of No. 3 level continues as reported last week. We are rising by the side of the lode, and by the kindly appearance of the ground we may expect it to be as equally productive as when last taken down, when it was worth 2½ tons of blende and 15 cwt. of lead per fathom. We are progressing favourably with the surface work.

GREAT D'ERESBY.—We hope to be in readiness to receive the engine and compressor by the end of this week.

BURY CAVANOR.—There is no change calling for any remark this week. Saturday next, the 29th inst., being the setting day, a full report shall be sent next week.

MONYDD GORDDU.—James G. Green, March 26: The 34 west has improved in appearance and value since the date of my last report; the lode is composed of light blue clay-slate, spar, and carbonate of lime, and carries a mixture of lead and gossan 1 ft. wide—good stuff for the floors. I hope to be able to set a value on it in my next. The 24 winze contains a little ore. The 12 west is without change. The stopes on junction, over the 24, is worth 1 ton per fathom for 8 ft. winze. Since I wrote you last I regret to say very little progress has been made in dressing; to-day everything is ice-bound, and it is freezing hard as I write; it is with difficulty we are enabled to keep the pumping wheel going. In consequence of this state of things, I shall not be able to sample as large a quantity of ore on the 30th as I expected.

MORFA DU.—T. Mitchell, March 27: The stopping points at the 48 and the 36 continue to look very well, and yielding the usual quantities of bluestone. All other operations are going on in regular order. Saturday next will be our setting-day.

MORFA TREKERBY.—Martin George, March 27: The 12 is driven east from Doctor's shaft 25 fms.; the lode in the end is 3 ft. wide, with ore to save. The 24 is driven east from Doctor's shaft 16 fms.; the lode in the end is 3 ft. wide, with ore to save. These two levels are suspended for the present waiting for the shaft to be down 35 fms. under the adit, when a level will be driven east, which will be under the old workings in East Downs. The shaft is sinking by 12 men, at 25¢ per fathom, and will be down for a 36 fm. level next month. The lode is between 3 and 4 ft. wide, showing favourable indications for improvement in depth from the ore now being saved, and mixed with munda. The 12 is driven east from Doctor's shaft 37 fms. from the shaft, and the lode is about 5 ft. wide, yielding 1½ ton of copper ore per fathom. The 34 is driven west from the shaft 16 fms., and the lode is 4 ft. wide, giving 1½ ton of copper ore per fathom. A winze in the 12, 20 fms. west from the shaft, is sunk to the 24, ventilating these levels, and yielding 1½ ton of copper ore per fathom, with profitable ground for stopping. A rise in the back of the shallow level, 20 fms. west from Doctor's shaft, has been put up to tributors on speculation, on a lode 3 ft. wide, which promises to open up a great extent of mineral ground hitherto unexplored.

PANDORA.—H. Nottingham, March 26: The 33 end going south on new lode is without change. In consequence of the water increasing in No. 1 winze, over this, we are obliged to suspend the sinking, and these men will commence a rise to meet the said winze, as soon as we can get the air-pipe fixed from shaft cross-cut to better ventilate it. We shall commence the rise in a lode worth 2 tons of lead and 1 ton of blende per fathom.—Goddard's Lode: The 33 going south is rather hard again, worth ½ ton of lead and the same of blende per fathom. The same level going north of shaft cross-cut is of the same value, with ground wet, and rather slow of progress. The stopes over this level fully 15 cwt. of lead and ½ ton of blende per fathom.—The 23 Fm. Level: No. 1 winze on new lode still looks well, but we have been obliged to suspend it, as before stated. No. 2 stopes over this level has improved in length, worth fully 15 cwt. of lead, and the same of blende per fathom.—Goddard's Lode: The 33 end north appears to be opening into the bearing ground now that we have been expecting, but it is not yielding ore to value yet. The two winzes south of shaft cross-cut are without any change to note, being worth from 10 to 15 cwt. of lead and blende each per fathom. I regret to say we are at a standstill with surface work. The big wheel became frozen up on Tuesday morning, and we have not been able to move it since, so we have disconnected the flat-rods, and have started the engine pumping to-day, and we hope to have the bottom clear again after to-morrow. But we cannot draw or raise till the frost breaks to liberate the big wheel. I think we shall soon see the change look.

PARYS MOUNTAIN.—T. Mitchell, March 27: The ground in the 90 south during the last few days has become hard and spare for driving. We have been expecting to meet with a hard bar of ground about this place. The 90 east of cross-cut is still further improving, and beginning to yield a little saving work for copper. Saturday next will be setting-day.

PATELEY BRIDGE.—Charles Williams, March 27: The 30 east on Rake vein is worth 15 cwt. of lead ore per fathom, and the vein is strong and well defined—altogether presenting a splendid appearance. We are making preparations to connect the old engine with the sump winze under the 30; the lift of pumps is fixed, and we are making a new T-bob to work the same, so as to have everything ready by the time the new engine is erected—sinking is suspended pending the completion of above. The Lumb vein in the 20 west is 10 ft. wide, and worth 18 cwt. of lead ore per fathom, and improving. Fielding's vein in the 20 north-west is also improving; now worth 1 ton of lead ore per fathom. The tribute pitches are without change to notice. The two new pumping engines arrived in the station yesterday, and are loaded on wagons ready to start for the mine.

PENHALL.—S. Bennett, P. Vian, March 22: The lode in the 70 east is of a very promising kind, and worth 6¢ per fathom. Just behind this end a rise is being put up to intersect the north part, or top lode, which looks very well in a stopes 10 fms. behind the end. The winze below the 60 east has been holed during the past few days to the 70. The section of lode on which that winze was sunk did not reach the 70 by 3 to 4 fms., and consequently this section will have to be undercut by a sort of middle level. A pair of men have just commenced to sink on a north lode below the 30. This lode has produced some good deposits of tin, and we think deserves a further trial.

PRINCE OF WALES.—John Andrews, March 27: The tributors continue operations at the different places as usual, but there is no change at either point.

RED ROCK.—John Kito, March 22: We have as yet broken into the lode but little in the 72, east of the engine shaft, but shall do so as soon as the water is drained a little and the end sufficiently far advanced to be under the winze which is now being sunk below the 60. We have about 4 fathoms further to drive to reach this winze, and I expect by the time that it is driven the water will be sufficiently drained from the lode to enable us to cross-cut the same, and as we are now immediately underneath a good run of ore in the 60 I have no doubt that we shall find it equally good in the 72. The stopes above and below the 60 are looking fairly well. The eastern shaft is now down within 3 ft. for a new level, 13 fms. below the 10, and we shall commence to cut out ledge, and drive on the course of the lode before the end of next week. The winze sinking below the 10 is working very well, and yielding good ore, and the stopes above are about the same as they have been for some time past. All surface operations are going on satisfactorily, and we shall sample another 40 tons of ore in a few days' time.

ROMAN GRAVELS.—Arthur Waters, March 2

TO THE METAL TRADE.

FOR COPPER, TIN, LEAD, &c., apply to—
Messrs. PELL, BOYLE, AND CO.,
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(ESTABLISHED 1849.)

The Mining Market: Prices of Metals, Ores, &c.

METAL MARKET—LONDON, MARCH 28, 1879.

IRON.	£ s. d.	£ s. d.
Pig, amp, f.o.b., Clyde.	2 2 0	2 2 0
" Scotch, all No.	4 0 0	3 5 0
Bar, Welsh, f.o.b. Wales	4 15 0	5 0 0
" in London.	5 2 6	5 7 6
" Stafford.	6 5 0	7 0 0
" in Tyne or Tees	5 5 0	5 10 0
" Swedish, London.	8 15 0	9 0 0
Nails, Welsh, at works.	4 15 0	—
Sheets, Staff., in London	7 15 0	8 5 0
Plates, ship., in London	6 12 0	7 5 0
Hoops, Staff.	6 15 0	7 5 0
Half rods, Staff. in Lon.	5 15 0	6 5 0
STEEL.	£ s. d.	£ s. d.
English, spring	13 10 0	14 0 0
" cast	30 0 0	40 0 0
Swedish, keg	14 0 0	—
" lag. ham.	15 0 0	—
LEAD.	£ s. d.	£ s. d.
English, pig, common	15 0 0	—
" " L.B.	15 0 0	—
" " W.B.	15 0 0	—
" sheet and bar	16 0 0	—
" pipe	17 0 0	—
" red	18 0 0	—
" white	18 0 0	—
" patent shot	18 0 0	—
Spanish	14 15 0	—
NICKEL.	£ s. d.	£ s. d.
Metal, per cent.	18 0 0	20 0 0
Ore, 10 per cent. per ton	24 0 0	26 0 0
QUICKSILVER.	£ s. d.	£ s. d.
Flasks of 75 lbs. ware.	6 2 6	—
SILVER.	£ s. d.	£ s. d.
Hispaniolan	15 0 0	15 5 0
English, Swansea	16 0 0	—
Sheet zinc	20 10 0	—

* At the works, 1s. to 1s. 6d. per box less for ordinary; 10s. per ton less for Canada; 1X 6s. per box more than 10 quoted above, and add 6s. for each X.

Terne-plates 2s. per box below tin-plates of similar brands.

REMARKS.—The markets during the month of March have not been of so uninteresting a character as they were all through January and February, and at times operators have shown considerable activity, and prices have made very rapid advances, though a slight relapse has again taken place in some metals. The usual monthly statistics, which will be published at the end of the month, will probably show some diminution in the stock of most metals, as the returns accounts up to the present time are satisfactory, and lead to the belief, which may create a better feeling throughout the trade, and tend towards the maintenance of quotations. There has been an increased amount of speculation going on all through the month, which has given a more animated appearance to the markets. The Bank rate has been reduced another ¼ per cent., and, owing to the easiness of the money market at the present time, it is not at all improbable but that, ere long, a further reduction may ensue. There are many holders who are building their hopes of higher prices upon this source, and to all appearance it seems a very substantial basis, and it is not at all unlikely but that the result of the extra little excitement which was shown during the middle of the month was occasioned partly through speculators thinking that the cheapness of money would influence prices. The markets seem to have gone strictly in accordance with the weather, for during the dry and sunny season of the month, which was so much appreciated by everyone, our markets showed a much brighter aspect, and it seemed to be generally believed that the long and dreary winter of depression in trade was nearly at an end.

But such does not appear to be the case, for with the change of weather there has been a change of feeling in business, and a downward tendency has been observed on the markets, and, although sellers make no very marked alteration in their prices, yet there appears to be much eagerness amongst holders to effect sales, as though they believed that the period of adversity would be further prolonged, and consequently they would prefer to diminish their holdings as far as practicable. But if such anxiety on the part of sellers continues to be manifested, it cannot do otherwise than create a want of confidence amongst buyers, and lead to lower prices; and if holders would obtain higher values for their stocks, it is pretty evident they must not be carried by any such gloomy prospects. During the month there have been a few more failures, but they have in no way affected our markets, though they may, perhaps, have caused a rather more uneasy feeling to exist, which would not otherwise have occurred.

COPPER.—The markets have been slightly variable, and a change of feeling has several times taken place. Liverpool quotations have been considerably in advance of this market, but they have not tended to strengthen the tone, and prices have assumed rather a downward tendency than otherwise. A good rise in this metal would doubtless be appreciable to holders at the present time, but scarcely any important rally can be looked for while stocks continue so unfavourable and the demand so limited. Possibly the actual stocks will show a still further increase at the end of the month, on account of the large arrivals which have taken place. An increase in the stock of Chili produce was given in last week's report for the first fortnight of this month, and it remains to be seen whether there has been a still further increase for the last two weeks. It is most surprising that miners should deem it advisable to produce so largely when such a very unremunerative price only can be realised, and more especially so after finding that the low prices bring no increase in the consumption, and it makes it most difficult to understand what benefit they expect to derive by continuing to overload the already much overburdened market in the way they are now doing. Are they looking forward to a better demand setting in? If so, upon what grounds? Or do they expect speculators to come into the market and run up prices for them? Supposing speculators were to come forward and operate for a rise, the advance could not very well be long maintained without the combined support of consumers.

There can be no reliance placed upon the stability of the market while such an uneasy, unsettled, and sensitive feeling exists. There may be one or two features which at an ordinary time would help to strengthen the tone of the market, but they in great measure lose their force and are disregarded when other weightier matters are exercising a more urgent and immediate influence. The production in Australia and Chili is generally said to be diminishing, but there is no positive proof of this being so, and even if it were so no benefit can be derived yet while from it, as there is plenty of copper already in existence. The usual interval between the Wallaroo sales having now expired, another sale will probably soon be announced. The Indian Exchange, although somewhat better, has not improved sufficiently to induce buyers to give out many fresh orders. The condition of the banking establishments in Chili and those here largely connected with the trade of that country, not being of a very satisfactory character, gives great cause for uneasiness and doubt. Although there may not be any fear as to a collapse, yet circumstances may arise to render it necessary to enforce realisations, and in such an event a very serious decline might ensue. But whether forced sales of Chilean produce will have to be resorted to or not, it is certain that financial facilities to the Chilean miners must be on a more restricted scale than hitherto. How this will work time alone will disclose. Some mining and copper companies may have to suspend or abandon operations, in which case production would be reduced, and the general state of the market thereby improved. But on the other hand, it may make no difference in this respect, but compel them to effect sales without delay at whatever price may be obtainable. It is, therefore, evident that unless there is a falling off in the supplies lower prices may be anticipated from Valparaiso. However, the course of the market will be more clearly defined after the receipt of advice by the next mail or two from Chili. In the meanwhile, unless something unforeseen occurs, our market will probably remain in a state of suspense, and a fair field is left open for speculators to operate as they consider advantageous to their several interests.

IRON.—The market generally for this metal shows no improvement in prices, and the little extra animation which was shown by speculators a week or two back in pig-iron has almost entirely died out, and the legitimate trade in most of the producing districts, according to the various reports, has again fallen into that state of lethargy in which it has remained for so long a period without showing any signs of recovery. The markets through the first quarter of the year have certainly been in a most unsatisfactory condition. They opened as badly as they are now closing, and it is a source of deep regret that the consumption keeps so limited. The Middlesbrough market is reported quiet, and as altogether having lost its improved condition of a few weeks back. Buyers have become suddenly very scarce, and although makers are demanding 36s. per ton for No. 3, they are quite unable to realise this figure, for purchasers will not give more than 35s., or in a few instances perhaps 35s. 6d. No. 4 is quoted at about 1s. per ton less. However, it is said that there are many makers who will not effect sales at so reduced a price, and having recently made fair sales they prefer abiding their time and see whether any improvement will set in as the spring advances before they make any difference in their quotations. The export trade for pigs keeps fairly active, and the shipments to Scotland are said to be about the same as they have been for the last week or two, though they are not equal to what they were last year. The continental trade remains tolerably steady, the greater quantities being reported to Holland and Germany. The deliveries to Grangemouth last week of Middlesbrough iron, as may be seen by statement at foot, were 5672 tons, which are less than they were for the same week last year by 958 tons. Many makers having adopted the course they proposed of reducing their production are said to be already reaping some benefit from this most sensible act.

The process of making steel from Cleveland iron is reported as going on favourably, and one company—Messrs. Holcock, Vaughan, and Co.—are stated as being very confident in their success, and already the value of shares in this company is said to have risen wholly through their possessing a patent which seems likely to prove efficient in making steel from Cleveland pigs. If this plan does succeed it must considerably help to cause a complete revolution in the iron

trade, for the durability of steel is so very much better than that of iron, that consumers will, when practicable, always give it the preference. The manufactured trade in this district remains unchanged both as regards prices and the demand. The mills continue very badly off for work, and what few orders are given out have to be executed at so very low a price that there is little or no profit attending transactions. There is no prospect, however, of any higher prices being realised, unless very considerably more employment can be secured. The price asked for ship-plates is 52s., and some sellers are demanding 2s. 6d. per ton more. Common bars are quoted 47s. 6d., and puddled bars at 30s. less than this price. There seems to be a rather better feeling prevailing at Leeds, and best Yorkshire iron has become in somewhat better request, and sellers keep tolerably firm in their quotations, believing that as the several railway companies have been making much limited purchases for so long a time, their pressing requirements will force them into the market shortly.

The trade at South Wales is reported as being in a most unsatisfactory condition. The clearances for last week are but small, and the quantity of bar iron delivered is stated as being next to nothing. Prices keep exceedingly low, and barely pay the cost of production. At Birmingham the markets are said to have slightly improved, but the improvement is so small that it is hardly perceptible. At Sheffield the market appears to be taking a quiet repose, for the inactivity displayed at all houses is most apparent and discouraging. The Glasgow warrant market has entirely lost its little enhancement of a week or two ago, and prices continue to steadily decline, business being done on Monday from 43s. 2d. to 43s. 5d. for cash. On Tuesday the market opened at 43s. 3d., but soon receded to 43s. cash, and 1½d. more one month. To-day's price for mixed numbers is only 42s. 9d. per ton.

For the week ending March 22, 1879 Tons 11,167

For the week ending March 23, 1878 7,735

Increase 3,442

Total increase for 1879 22,417

Imports of Middlesbrough pig-iron into Grangemouth:—

For the week ending March 23, 1878 6,880

For the week ending March 22, 1879 5,672

Decrease 1,208

Total decrease for 1878 4,757

FURNACES.

In blast March 22, 1879 89

In blast March 23, 1878 87

TIN.—At the commencement of the present week the market for this metal was quiet, and prices remained nearly stationary. Subsequently, however, a much better tone prevailed, and prices made rapid advances, sellers having obtained for fine foreign 68½ per ton.

During the first week of this month the price asked for Straits and Australian was about 63½ 10s., but a decline soon occurred, and sales were effected as low as 62½ 5s., but sellers, however, soon withdrew from the market at these rates, and quickly advanced their quotations to 63½ 10s., but another relapse set in, and foreign tin was again procurable at 66½ per ton. Last Wednesday more firmness was displayed, and prices not only recovered what they had lost, but something more. The maintenance of quotations depends chiefly upon future supplies. The deliveries are now reported as being satisfactory, and, therefore, if the production continues moderate, a still further enhancement in the value of bar silver, as there is a good chance of the large and heavy stocks being considerably reduced. The anticipation of this is already bringing forth many buyers, and if the ensuing statistics show that a diminution has taken place in stocks it will doubtless give great confidence to operators, and there is a fair chance of tin increasing in value during the next month, providing the Australian supplies do not show any increase upon recent advances.

LEAD.—There is little change in the state of this market; the demand keeps moderate, and prices are fairly maintained.

STEEL is in but limited demand at last week's quotations.

TIN-PLATES.—At a large meeting held at Swansea last Monday of tin-plate makers it was unanimously agreed to maintain present prices, and also if the demand would not allow of existing rates to reduce production rather than give way in quotations. These are very sensible resolutions to have passed, for it is certainly much better to limit the supplies in accordance with the demand and obtain small profits for every transaction, than to do a large business with a positive loss attending each order executed. The past and present depression in trade is sufficient proof that there can be no other way by which a fair value can be obtained than by reducing the supplies, and it is greatly to be hoped that these resolutions which makers have made may be the means of stopping future losses, and that profits may result from all orders that are henceforth given out.

QUICKSILVER is firmly held at 6s. 2d., which has been paid for a considerable quantity. Importers are not disposed to sell very freely, and consequently the tendency is good. In California the price is firm at 38c., which is an advance of 1c. from the point previously touched.

FRY, JAMES, and CO.—COPPER: The firmer tone noted in our last, which prevailed a fortnight ago, has given way to renewed quiet, and quotations have receded somewhat from the highest. IRON continues to move off slowly, and prices of some kinds have given way slightly. TIN has again been subject to sudden fluctuations without apparent cause beyond the action of some speculative dealing. LEAD continues to hold the late improvement in price, and a fair business has been done. SELLER shows no change. TIN-PLATES remain steady.

Messrs. FIDLEY and ABELL—GOLD: This metal continues to flow into the Bank the amount sent in since the 20th instant being 224,000z. There is at present no demand for export, and any immediate arrivals will be purchased by the Bank. Sovereigns to the value of 150,000z. have been withdrawn. The Peninsula and Oriental steamer has brought 56,945z. from India. SILVER: The market was very quiet, and without alteration in price, until the beginning of this week, when orders for the Continent came to hand, and were executed at 49½d. per oz., at which rate the silver by the Pacific steamer was sold. On the following day (26th instant) a heavy demand for India, and a considerable rise in the rate for the pound draft, caused a great improvement in the value of bar silver. Business was at first done at 49½d., and in the afternoon the price advanced to 50d., and all available supplies were taken at that rate. The market closes tolerably firm, and the nearest quotation we can give is 50½d. per oz. The arrivals, which have not been large, comprise 56,000z. from the Pacific, and 58,000z. from New York. The Peninsula and Oriental steamer takes to-day 89,000z. to Bombay.

The MINING SHARE MARKET opened dull this week, offering a great contrast to the active and buoyant state of affairs at our last. The great demand for shares which had then sprung up all at once caused a rise in quotations, and a difficulty, as we observed, in getting stock, so that not much actual business was transacted, and when the unexecuted orders were not renewed at the advanced rates, and the price of tin was said to be giving way unexpectedly, a reaction set in, and prices, or rather nominal quotations, became lower all round. On Wednesday things were at their lowest, and from that time have again improved, and leave off firm. The mines chiefly dealt in have been Roman Gravel, Tankerville, Herodsfoot, South Frances, Wheel Peavor, South Condurrow, Leadhills, Van, and a few others.

TIN.—It became reported early in the week that the smelters were giving 22 per ton less than the official standard for ore, and that a reduction equal to the late advance might, therefore, take place any day; thus an uneasy feeling got abroad, buyers of shares ceased bidding, and a reaction set in, followed by a considerable fall in quotations. There are "bulls" and "bears" of tin as well as of shares, and as much gambling speculation goes on in the metal markets of London as in the share markets, and the changes and fluctuations in the prices of metal among brokers and dealers seem to be telegraphed to Cornwall, and made to act and react on the standard for ore. This is not as it used to be, nor as it ought to be. On Wednesday things got to the lowest, and it was difficult to sell shares in tin mines; on Thursday another reaction took place, another demand set in, and prices recovered the late fall, and leave off much better.

The Banca sale of tin on Wednesday realised equal to 71½ 5s. in London. The sale in January realised 62½, and the smelters to-day (Friday) advanced the standard a further 2½ per ton. Dolcoath, 28 to 30. Carn Brea declined to 29, 31; leave off 32 to 34. Cook's Kitchen, 24 to 3. Tincroft, 11½ to 12. South Frances opened firm, declined to 9½, 10, and leave off 10½ to 11. Wheel Peavor declined to 9, and leave off 9½ to 10. South Condurrow have advanced to 11½, 12. West Frances declined to 4, and leave off 4½ to 5½. East Pool, 10½ to 11½. Penstruthal, 1s. 6d. to 2s. 6d. West Basset, 4½ to 5½. Wheel Agar, 3½ to 4. Wheel Basset, 1 to 1½. Wheel Grenville, 3 to 3½. Wheel Ury, 12s. 6d. to 15s.

COPPER MINES have been moderately active, without any material change in prices. Devon Great Consols, 2 to 2½; Mellanear, 3½ to 3¾; Marke Valley, 7s. 6d. to 10s. At the West Seton meeting, held in Cornwall, the accounts showed a loss of 1213s. on four months' working, and a debit balance of 2536s. All costs charged up to February. No call was made. Parys Mountain, 10s. to 11s.; Morfa Du, 17s. 6d. to 20s.; West Tolgus, 28 to 30.

LEAD MINES have been moderately active, and prices which declined considerably early in the week have somewhat recovered again. Van, 19 to 20; at the meeting (particulars of which will be found in another column) the accounts showed a profit on the year of 18,231s.; dividends paid of 16,875s.; and a reserve fund of 32,261s. 3d. were submitted and passed. The future of the mine looks brighter. The reserves are stated to be very large, and the present returns less than the ores discovered monthly, and while the costs have been very much reduced, the rise in lead will increase the returns, and the profits considerably. Roman Gravel, 8 to 8½; the mine sells 100 tons of lead ore to-day, and will sample 100 tons

again on the 31st. Tankerville has been weaker at 3½ to 3¾; the 206 or bottom level west is yielding stones of ore. The lode in the 206 east is worth 2 tons of lead ore per fathom. Herodsfoot, 3 to 4; the lode in the rise over the 160 is 3 ft. wide, and improved to 30 cwt. of rich ore per fathom, and already 30 tons of rich ore are dressed and ready for sale.

Great Laxey, 16½ to 17½; Bettws-y-Coed, 15s. to 20s.; East Van, 1½ to 2; Glenroy, 7s. 6d. to 10s.; Leadhills, 1½ to 2½; West Chiverton, 22s. 6d. to 27s. 6d. Pandora is looking well, and sold this week 25 tons of lead ore for the month, at 9½ 11s. 6d. per ton, being an advance of 2½s. per ton on the sale of last month. West Pateley, 2 to 2½; Pateley Bridge, 3 to 1½; at the meeting held this week it was resolved to reconstruct the company with sufficient capital. The 30, on Rake vein, remains unchanged. D'Eresby Mountain, 30 to 40; Aberllyn, 10 to 12; Clementina, 1 to 1½; Caron, 2 to 2½; Frongoch, 2 to 2½; Grogwin, 2½ to 2¾; Hartington Moor, 1½ to 2; Mawston, 1½ to 2; Red Rock, 1½ to 2½; West Wye Valley, 1½ to 2; Wye Valley, 1½ to 2; this mine sold 40 tons of lead ore on Thursday, at 9½ 12s. 6d. Bwlch, 22s. 6d. to 25s.

FOREIGN MINES.—Arendal, 3½ to 4½; Cape Copper, 26 to 28; Chontales, 7s. 6d. to 10s.; Colorado, 1½ to 1¾; Don Pedro, 14s. to 16s.; Eberhardt and Aurora, 4½ to 4¾. Javali, 4s. to 6s.; the accounts for the year ending December 31 show net proceeds of gold remitted from the mine, 16,316s. 8s.; total credits, 16,362s. 18s.; costs at the mine, 10,901s. 2s. 4d.; maintenance of work, &c., 1851s. 1s. 4d.; expenses in London, 588s. 8s. 2d.; interest on debentures and loans, 1841s. 16s. 1d.; goods shipped during the year, 850s. 8s. 4d.; total expenses, 16,032s. 17s. 11d.—leaving 330s. 0s. 11d. to be added to the credit balance, making it 2812s. 19s. 11d. The average value per ton of the ore crushed was 15s. 6d., and 21,438 tons were crushed during the year at a cost of 11s. 6d. per ton. St. John del Rey, 260 to 270; the profit on the month of February was 6000s. Frontino and Bolivia, 2½ to 2¾; Hultafall, 1½ to 2½; Last Chance, 10s. to 12s. 6d.; New Quebrada, 1½ to 1¾; Panulillo, 22s. 6d. to 25s.; Richmond, 8½ to 9½; Santa Barbara, 2½ to 2¾; Canada Gold, 1 to 1½.

The Market for Mine Shares on the Stock Exchange has been somewhat irregular during the week. At the commencement the dullness last noticed continued, and even increased; on Wednesday and Thursday there was a slight improvement, and to-day, probably owing to the settlement having commenced, comparatively little has been done. The prospect, however, is generally considered to be brighter, and it is stated that the company for working an extensive property in the neighbourhood of the Richmond mines in Nevada, which has been talked about for some time past, will be launched in the course of the ensuing week. From the great success that has attended the working of the Richmond property no doubt is entertained that if the new concern is brought forward without the drag of a heavy amount of purchase-money (which has been the chief cause of the almost invariable losses which have resulted from investments in American mines), it will receive the hearty support of the public. The property is situated in a district in which dividends have been earned both by Americans and Englishmen, which is much more than can be said with regard to some of the companies engaged in mining in the Western States, which are still quoted and sometimes dealt in on the London market.

The manner in which shareholders and creditors are sacrificed by liquidators and trustees in winding-up and liquidation cases has frequently been pointed out in the Journal, and it has been suggested that some alteration of the law is necessary to meet these malpractices, and punish them. An observation made this afternoon by the Master of the Rolls in a case before him seems to confirm this view. He said that it seemed to him to be the uniform practice for the liquidation proceedings to be continued until the expenses incurred exceeded the assets, and that then an order to distribute the assets was applied for, so that the whole went to the liquidators and solicitors, and no one else obtained anything.

Some remarks which are worthy of the perusal of those doing business with the Société Générale pour favoriser le développement du Commerce et de l'Industrie en France appear in a memorial to the Minister of Justice from Mr. J. David, of the Crédit National. The memorial states that although under the form of a *société anonyme*, the concern is virtually no other than the firm of Denière, De Gonet, and Co.; the senior member, by trade a manufacturer of bronzes, was President of the Tribunal of Commerce of the Seine; the second, a judge d'instruction under M. Rouher; and that the other members of the society are shadows. "After having all their life given judgments and decisions against the financiers of their day—matters change with the times—Messrs. Denière and De Gonet have in their old age become financiers." Mr. David complains that "these two ex-magistrates of the Empire" have, amongst other things, brought an action against the *gérant* of the Crédit National for the publication of false news regarding a robbery committed in one of the branch establishments of the Société Générale, and that with regard to such publication judgment was on Nov. 30 obtained in Paris against the *gérant* by swearing that the statement published was false, and judgment was also obtained on the same day, and almost at the same hour, at Caen against the person inculpated by swearing that the same statement was true. The Procureurs Généraux, &c., are called upon to investigate Mr. David's charges. He declares that there exists no inventory worthy of the name giving details of the assets and value of the real property of the society. He states that the nominal capital of the concern is 100,000,000 frs. (4,000,000l.), of which one-half is called up; and that there is supposed to be a reserve of 12,470,545 frs. (about 498,200l.); and he declares that, as in the case of the Glasgow Bank, this reserve is illusory; that it is not represented either in money or securities, and really exists on paper only; that the capital itself is swallowed up in foreign operations where the money is unproductive and unavailable—perdu sans retour; and that the concern is only living on its deposits for long terms and renewals. As the memorial is of enormous length, it is impracticable to give a complete abstract; but the above will suffice to show the nature of the document. As the Société Générale occupies in France a position equalled only by the London and Westminster Bank in this country, it is equally to the interest of the shareholders and of the French public that the charges made should be at once investigated by the proper authorities; for although it may be hoped that the concern is solvent, the smallest shortcomings in connection with the management should be at once corrected. If the memorial of Mr. David be justified, radical reforms should be at once introduced; and if the statements made therein be not supported by facts, the propagator of them should be consigned without unnecessary delay to Mazas or Charenton. The amounts absolutely lost are put down at 99,370,000 frs., including 20,000,000 frs. for the capital of the Mining and Industrial Society (apparently a Franco-Russian concern), and nearly 8,000,000 frs. on the sulphur mines of Grotto Calda. Was it the Société Générale which advanced funds on Italian sulphur mines which run together annually, and were held by an English company? There are further estimated probable losses of 18,000,000 frs. on guano warrants discounted for Messrs. Dreyfus; 1,000,000 frs. on Grigoletti-Merthyr shares, &c.; and various other items. The conclusion drawn, rightly or wrongly, is that a dividend of 3,600,000 frs. declared three years ago was not justified. All these are matters which require to be cleared up, and every facility will be offered for removing any want of confidence which may have been wrongly created.

Canada Gold, 1 to 1½; the company is divided into 15,000 shares of 1l. each, which after payment for the leases, leaves an ample working capital of 5000l. Mr. W. Clarke, of Melbourne (a recognised authority on gold mining) states:—"If we had so good a prospect in Victoria there would be what we call a rush to the ground of about 10,000 men in a week. Every claim of likely appearance would be staked out, and each would have a market value amounting to many hundreds of thousands of pounds for the area you have."

Tharsis Copper and Sulphur, 20½ to 21; considerable anxiety is felt by many holders with regard to the prospects of litigation indicated by the caution of Messrs. Gosse and Haselden, published in last week's Journal, more especially as that was the first intimation many had had of the title to the property being in dispute. There has always been a certain amount of mystery about Tharsis matters, and it is very naturally asked whether the Tharsis executive were aware of the position of the case between the representatives of the Tharsis Company and Messrs. Gosse and Co., at the time the contract of November, 1878, was made with Mr. Mercier. To accept transfer of property from an unsuccessful defendant in an action whilst a pursuer held judgment which was unsatisfied appears, to say the least, injudicious on the part of the representatives of the Tharsis Company, and unless those in the secret have a design of purchasing at a low price the shares of those who desire to sell from a dread of costly litigation, a full explanation of the whole matter should be at once published. What is required to be known is—in whose name does the property of the Tharsis Copper and Sulphur Company stand in the Spanish Government registers? and until this question is satisfactorily answered the value of the shares in the market will continue to decline.

St. John del Rey, 260 to 270; the latest telegram from Morro Velho, dated Rio de Janeiro, March 23, states that the produce for the first division (11 days) of March was 13,750 oits., of the value of 5328s., the ley of the ore being 6.1 oits. per ton. The profit for February was 6000s. Don Pedro North del Rey, 4 to 4½; Capt. Vivian (Feb. 24) writes that he "has just been informed that the ironwork for the 60-ft. wheel has been unloaded from the railway cars from Sitio on the 10th inst. Senhor Claudio is doing his utmost to get it here as early as possible; in reality, it is greatly required on the spot. You can have no idea the state in which the wheel is

in and the trouble and worry it is causing." Almada and Tiritio, 1/2 to 1; the January profit was \$1100.

Richmond, 3/4 to 1; the usual telegram from the mines at Eureka, Nevada, states that the week's run was \$80,000, from 1132 tons of ore. During the week the refinery produced \$40,000. The manager writes (March 5) that there is nothing of importance to report from any of the different departments in either mine or smelting works. The drift from the 40 cross-cut has been extended 9 feet in hard ground; the fissure is very well defined, and looks very promising for ore. All the machinery in the mine is working satisfactorily. The stone furnaces are doing good work, and for the past week they averaged 65 tons each daily, and have reached as high as 77 tons for a day or two. The refinery is doing good work, and running very smoothly.

The Market for Hydraulic or Gold Washing shares has remained quiet, the business reported being slight. The shares retain their quotations. The mail still brings information of heavy snow and rain throughout almost all the States, and a good average season is anticipated. Blue Tent; a telegram received this week states a partial clean-up at the South Yuba claim, resulting in a return of \$7300. Water was very plentiful, and washing steadily in progress. Hultafall, 2 to 2 1/2; the weather in Sweden continues very severe, but the underground workings are not in any way interfered with by this. The mine continues to produce rich lead, and to open up in a highly satisfactory manner. The winter is now drawing to a close, and important results may, it is said, be expected.

Lead mine shares have followed the general market; they were very dull at the beginning of the week, better on Thursday, and dull again to-day. The Great Laxey report and accounts, to be presented at the meeting to be held on April 9, were issued to-day. The general accounts of receipts and expenditure from Aug. 2 to Feb. 7 shows—Balance from last account, 4328/10s. 3d.; materials sold, 1024/7s. 8d.; transferred from the reserved fund, 2000/; lead and blende, 29,612/10s. = 26,043/7s. 11d. Labour cost, 13,203/11s. 10d.; merchants' bills, freight, insurance, management, and all other charges, 11,034/10s., leaving credit balance 11,755/8s. 1d., out of which the October and January dividends (together 8250/1) were paid, leaving 3505/8s. 1d. to carry forward. The funds for the payment of the two dividends mentioned were provided as follows: 5324/8s. 2d. from the net profit of the half-year's working, 2000/ from the reserved fund, and 8324/8s. 2d. from the balance brought forward, the amount carried forward being less than last half-year by that amount. The reserve fund now stands at 3308/8s. 4d., of which 3000/ is invested in Consols, and 308/8s. 4d. at the bank, who have also a balance of 1115/8s. 9d. on general account. The value of the ore in stock not included in the balance-sheet is 5789/10s. 3d. Beddelliffe and W. H. Rowe, after reporting upon various operations, state they are proceeding with the trial of the middle ground section of the mine as well as circumstances permit. The driving above the 110, going south from the rise, is worth 16/ per fathom, and the sinking in the sole of the 110 is worth 15/ per fathom. No regular lode being traceable in the forehead of the 110 level a cross-cut has been driven westward 5 fms., intersecting what is evidently the western branch, upon which the level is being continued northward. Satisfactory results continue to be derived from the rock drills—a very appreciable saving on the cost per fathom being made, while the speed of driving is more than doubled. All the surface works and machinery are in a satisfactory condition. Additions and improvements are constantly being made as necessity requires or time permits. They look forward to increased returns from the mine, and hope that something like reasonable prices may be obtained in the current half-year for their ore when put into the market. They thoroughly fall in with the new regulations for the working of the mine lately agreed to by the directors, and which will come into operation in a few days. They do not anticipate that the men as a body will offer any serious objections to them, but among such a large number of men it would be worse than useless to suppose that all will fall in with or be satisfied by them.

Mineral Corporation of Great Britain, 10 to 11; with regard to the Hafna Mine, the manager writes that in No. 3 adit the lode that they are driving on is 4 ft. wide, and worth 1 1/2 ton of blende per fathom, with some good lead mixed with it. They have to-day (Thursday) cut a large stream of water in the end, which may be looked upon as a very favourable feature. The rise in the back of the No. 3 level continues as reported last week. They are rising by the side of the lode, and, by the kindly appearance of the ground they may expect it to be equally as productive as when last taken down, when it was worth 2 1/2 tons of blende and 15 cwt. of lead per fathom. They are progressing favourably with the surface work. At Great D'Eresby they will be ready for the engine and crusher by the end of the week. A full report is promised for next week.

Van, 19 to 20; the annual meeting, particulars of which will be found in another column, was held on Thursday. The report from the mine was considered very satisfactory. Pant-y-Mwyn are quoted at 2 1/2 to 3 1/2; it is stated that a rich section of ore ground is being opened up in the Modlyn shaft. About 40 tons of ore are ready for market, and about 10 tons on the bank and on the dressing floor. The agent expects to sell 100 tons of lead next month. It is reported that at Rydalun the returns, which were only 15 to 20 tons a month about six months ago, have been increased to 50 tons monthly. The mine is now said to be making sufficient profits to pay from 7 to 8 per cent. in dividends on the capital.

Frongoch, 2 1/2 to 2 3/4; the agent's report states that important progress has recently been made, both underground and at surface. The new perpendicular shaft has been completed to the bottom of the mine, or 8 fms. below the 142, and the working is thereby greatly facilitated, as an increased number of tributaries can now be put to work raising ore from many parts of the mine that were not readily approachable before this work was finished. It is stated that in two months the shaft will be down for a fresh level, and that meantime a winze is being sunk for ventilation of the same, and is going down in a fine course of ore, similar to the rich deposit in the 142, which has been valued at 5 tons per fathom, and has been "stoped" underhand at 3/ per ton. Other points in the mine are looking satisfactory; 40 tributaries are at work raising ore, a parcel of nearly 100 tons being now dressed and lying in the ore depot ready for market. At surface an important change has been effected, the new line of the main shaft being now in place of the steam-engine. The report states that "the new line of pump rods has been completed and attached to the big wheel, and the working of the steam-engine has been suspended."

It is apparent that this change must effect a great saving both in wages and cost of coals, the consumption of which by the large 60-in. engine has hitherto been a formidable item in the monthly pay sheets. Several of the largest shareholders and directors have recently visited the mine, and expressed great satisfaction at the prospects of the undertaking and the progress made, particularly as, so far, all has been accomplished well within the estimated time.

Grogwinion, 2 1/2 to 2 3/4; the monthly report shows that good progress continues to be made at all points, and particularly in the bottom level on No. 3 lode, which is passing through a fine course of rich ore, and looking well, particularly for deeper workings. Caron, 2 to 2 1/2; the manager has made a special report upon the progress made at the mine, which states that there has been a continuous and satisfactory improvement in the lode from the adit level downwards, and that at the present time the bottom level is productive. The shaft is now sunk to the 22, and a fresh level will forthwith be opened up. A parcel of lead has been sold, and a further quantity is already dressed, and being constantly added to. The company have decided, in order to provide funds for fully developing the lode in depth, to issue about 1300 of the reserve shares at par to the present shareholders, who on subscribing the same are to have as a bonus a certain number of fully-paid forfeited shares at half-price.

Wye Valley, 1 1/2 to 2; there were 40 tons of lead ore sold on Friday, at 9/ 12s. 6d. per ton. The report states that the mine has further improved, particularly in the 22 east. West Wyo Valley, 1 1/2 to 2; the sinking of the main shaft has been resumed, all works are in full operation, and sales of ore will shortly recommence. Red Rock, 1 1/2 to 2 1/2; operations at this mine are progressing well, and the new discoveries continue productive. Another parcel of 40 tons will be sampled in a few days. Crosswood, 1 1/2 to 2, cum all; satisfactory progress is making, and a second division of profits will shortly take place. Mawston, 1 1/2 to 2; the mine is looking well. A parcel of lead has just been sold at 12/ 5s. per ton. Hartington Moor, 1 1/2 to 2; no fresh news.

At Pateley Bridge pending the erection of the new boiler and pumps operations have had to be partially suspended. A special meeting was held on Friday, when the preliminary resolutions for a reconstruction of the company were passed. Particulars will be found in another column.

Subjoined are the closing quotations:—

Ashton, 1/4 to 1/2; Carr Brea, 3/4 to 1; Devon Consols, 1 1/2 to 2; Dolcoath, 2 to 3; East Caradon, 1-1/8 to 1-3/8; East Van, 1 1/2 to 2; Glenroy, 3/4 to 1; Glyn, 1/2 to 3/4; Great Laxey, 1 1/2 to 1 3/4; Gwernymynydd, 4 to 4 1/2; Hingston Down, 1/2 to 3/4; Leadhills, 2 1/2 to 2 3/4; Marke Valley, 3/4 to 1; Parys Mountain, 3/4 to 1; Pateley Bridge, 3/4 to 1; Penstruthal, 1-1/8 to 1-3/8; Roman Gravel, 1/2 to 3/4; Rookhope, 3/4 to 1; Tankerville, 3/4 to 1; Tincroft, 10/6 to 11/4; Van, 19 to 20; West Ashton, 1 1/2 to 1 3/4; West Basset, 4/6 to 5/6; West Cliverton, 1 to 1 1/2; Wheel Crebor, 3/4 to 1; Wheel Grenville, 3 to 3 1/2; Almada and Tiritio, 3/4 to 1; Birdseye Creek, 3/4 to 1; Blue Tent, 2 to 2 1/2; Cape Copper, 2 1/2 to 2 3/4; Choulatos, 3/4 to 1; Colorado United, 1 1/2 to 2; Don Pedro, 1 1/2 to 1 3/8; Eberhard and Aurora, 1-1/8 to 1-3/8; Exchequer, 1-1/8 to 1-3/8; Flagstaff, 1/2 to 3/4; Frontino and Bolivia, 1/2 to 2 1/2; Hultafall, 1 1/2 to 2 1/2; I.X.L., 1-1/8 to 1-3/8; Javali, 3/4 to 1; Kapanga, 3/4 to 1; Last Chance, 3/4 to 1; New Quebrada, 1 1/2 to 1 3/4; Pectaron, 1-1/8 to 1-3/8; Placerville, 2 to 2 1/2; Pumas Estrella, 2 1/2 to 3 1/2; Port Phillip, 3/4 to 1; Richmond Consolidated, 3/4 to 9/4; St. John del Rey, 2 1/2 to 3 1/2; San Pedro, 2 1/2 to 3 1/2; Sierra Butte, 2 to 2 1/2; South Aurora, 3/4 to 1; United Mexican, 3/4 to 1; Canada Gold, 1 to 1 1/2.

At the Swansea Ticketing, on Tuesday, 1577 tons of copper ore were sold, realising \$431.16s. The particulars of the sale were—Average standard for 9 per cent. produce, 75/ 6s.; average produce, 10 7/8; average price per ton, 5/ 6s. 11d.; quantity of fine copper, 164 tons 1/2 cwt. The following are the particulars of the two last sales:—

Date. Tons. Standard. Produce. Per ton. Per unit. Ore-copper.
Feb. 28..... 1017 10 0 9 1/2 .. £ 4 16 10 .. 9 3/4 .. £ 18 11 0
Mar. 28..... 1577 75 6 10 7/8 .. £ 5 11 10 .. 10 3/4 .. £ 16 10 0
Compared with the last sale, the advance has been in the standard 2 1/2 5s., and in the price per ton of ore about 4s. 9/1. Messrs. Richardson report that the Betts Cove ore gave a produce of 6 13-16, and sold at 9s. 7 1/2d. per unit; Careira, produce 6 1/2, per unit 9s. 7 1/2d.; Virneberg, produce 14 11-16, per unit 10s. 11d. There will be no sale on April 8.

ACCIDENTS IN MINES.—The Royal Commission on Accidents in Mines, presided over by Prof. Smyth, will commence its labours on Monday next, at 2, Victoria-street, Westminster. Mr. Dickinson,

the senior Government Inspector of Mines, will be examined. Mr. Arthur Williams, barrister, is the secretary.

TELEGRAM, FRIDAY NIGHT.—The Cornish smelters have to-day raised the tin standards 2/ per ton. The standards now are—Superior common, 63s.; superior fine, 64s. per cwt. Good news was received from Levant Mine, St. Just, to-day. Capt. Trezise reports as follows:—We have visited the 70 to-day, where we have recently cut a new lode; it has a very kindly appearance. We broke some good stones of copper and tin to-day; the lode and the channel of ground, by it looks well; the lode is worth 20/ per fathom. At North Levant Mine to-day a meeting of adventurers was held; the purser, Mr. Richard Boyens, presiding. The accounts for 16 weeks showed total costs of 975/; 16 tons of tin, less dues, produced 535/; showing a loss of 539/; the balance against the mine being 737/. It was decided in view of encouraging prospects of the tin market to make no call. Best black tin is now worth 40/ 2s. 6d. per ton.

TANKERVILLE.—This mine is looking very well. The shaft is down to nearly the 220, where fresh ore ground will soon be opened. The 100 tons lately sold fetched 1012/; which we understand gives a profit. It is expected that the price of lead will steadily advance at a moderate rate, and this would soon place this company in a very satisfactory position.

PANDORA.—They have begun to rise in the back of the 33, on new lode, which is worth 2 tons of lead ore and 1 ton of blende per fathom. The 33 south, on Goddard's lode, is worth 1/2 ton of lead and the same of blende per fathom; and the 33 north full 1/2 ton of lead and 1/2 ton of blende per fathom. No. 1 winze below the 23, on new lode is a good course of ore, but is suspended till drained by the rise from the level below. No. 2 stoep has improved, and is worth full 1/2 ton of lead per fathom. Other places are productive. They have sold this week 25 tons of lead ore for the month, at 9/ 11s. 6d. per ton, which is 24s. per ton above the sale last month.

HERODSFOT MINE.—This mine has improved during the past week. The lode in the rise above the 160 is now worth 30 cwt. of rich lead ore per fathom. In the back of the 190 a new stoep has been opened, and where the lode is worth 12 cwt. of lead ore per fathom. The lode the 205 end south is worth 15 cwt. of lead ore per fathom. Three stoeps in the back of this level are worth on an average 15 cwt. of lead ore per fathom. The various bargains are worth in the aggregate more than 5 tons of lead ore per fathom: 30 tons of lead ore dressed and ready for sale, and the first sampling under the new management will take place in about three weeks.

BODIDRIS.—Friday Afternoon: A report has just been received at the company's office announcing a further improvement in the Maes-y-Pwll lode, the lead having become more solid; this lode is now 19 feet wide.

COMBARTIN.—The counter lode in the adit has further improved. It is now 5 ft. wide, with a leader for 18 in. high from the bottom of the level producing excellent lead ore. The agents hope soon to have the pleasure of reporting a valuable discovery, as they are confident the level is passing over a run of good lead ground.

SIGNS OF IMPROVEMENT.—We hear that the brickworks recently completed by the Cakemore Colliery Company are becoming unable to cope with the orders in hand. The quality of the bricks now being turned out is rapidly becoming appreciated in the district, and as soon as the siding to the Great Western Railway in course of construction is completed the profits will be considerably enhanced. We are informed that the 7 1/2 per cent. preference shares have been readily subscribed to, and that the company will shortly appear in the Dividend List, as it is also making very fair profits on the well-known 30-ft. South Staffordshire seam of coal, a large extent of which has been opened out in its maiden state, upwards of two miles of gate-roading being already driven.

With this week's Journal a SUPPLEMENTAL SHEET is given, which contains: Original Correspondence—Improved Coal-Cutting Machine; London Coal Supply (W. J. Thompson); Colliery Management; New Mexico (F. M. F. Cazin); Ore Concentration (J. Mosheim); Nouveau Monde Gold Mining Company; Consolidated Hercules and Rio Silver Mining Company (G. W. E. Griffith); Canadian Mining Notes—No. 11: Is it Right to Pay any Purchase Money for Mines (W. W. Stuart); The Tins Copper and Sulphur Company; The Rio Pinto Company; The Helva District; Discovery of Lead Ore in the North of England (J. Frost); Hollway's Process for Treating Metallic Sulphides; Another Strike at Devon Great Consols; Mining in the Flintshire District; North Wales Slate Trade; Welsh Granite Quarries (E. Spargo); Penstruthal Mining Company; Gwennap-Bell Van Mine; South Cambrian Mining Company (A. Williams); Old Herodsfot Mine (P. Goffin); Mining and Mines in Cardiganshire (A. Francis); Mutual Shares and Dividends—No. 1: Scotch Share Market—Foreign Mining and Metallurgy—Registration of New Companies—Asbestos—Refining Copper—Treating Waste Sulphuric Acid—Patent Mines—Meetings of Van Gonsed and Merilyn, Llanrwst, Pateley Bridge, Rookhope, and Mill Dam Companies, &c.

BRITISH IRON TRADE ASSOCIATION.—A meeting of the Executive Council of this Association was held on Wednesday at Westminster. Mr. David Dale, president, in the chair, among those present being Mr. Samuelson, M.P., Mr. Heath, M.P., Mr. Robertson, M.P., Lord F. Cavendish, M.P., Mr. Bolekow, and Mr. Menelaus. The Council took into consideration the various bills introduced into Parliament during the present session the operation of which is in any way likely to affect the iron and steel trades. Mr. Samuelson, M.P. (who was Chairman of the Committee of 1870 on Letters Patent), referred to the Bills introduced by Mr. Anderson, M.P., and the Attorney-General, and it was decided that the Council should give its attention to the Government Bill (which was generally approved, with the exception of the proposed extension of the term of duration from 14 to 21 years, a proposal regarded as likely to prove dangerous to the interests of the trade) in its various stages towards passing into law. The Valuation Bill of Mr. Slater-Booth was referred to by Mr. Heath, M.P., and after consideration the Council decided to support a clause as to the valuation of coal and other mines, providing that "the annual value of coal and other mines—except tin, lead, and copper—shall be assessed yearly according to the quantity of mineral gotten," and that the basis of assessment of such mines should be a sum equal to the value of the coal mine or other mineral gotten in the year immediately preceding the time of making the assessment, such value to be calculated upon the fair letting price of the coal mines or other mineral to the time of making the assessment. The Employers' Liability for Injury Bill and the North Staffordshire Railway Bill were also considered.

ECONOMIC PRODUCTION OF STEAM.—An improved method of generating steam is at present being introduced in America by Messrs. Holton and Co., of Chicago. The American Manufacturer states that for 35 years persistent efforts have been made to run steam generators inside the fire-box or furnace of steam-boilers. All, however, proved signal failures until Mr. Good hit upon the true principle of keeping up a steady and continuous supply of water from the boiler into the generator. No matter how intense the heat to which the latter is subjected the water cannot be driven from it into the boiler, but can only escape in the form of steam, which is rapidly generated and forced into the boiler. In the days of prosperous manufacturing few men paid much attention to their fuel bills, but the close margins to which all are now subjected through competition makes the consumption of fuel a matter of serious consideration. It has been practically demonstrated that this appliance—placed in the furnace, and connected with the boiler—will save from 30 to 40 per cent. in fuel. The time consumed every day in getting up steam will also be reduced about one half. And what is equally important with the saving of fuel is that the working capacity of the boiler will be increased nearly one-half in power by the additional area of heating surface exposed to the flames in a position where the heat will be most effective, and by the rapidity with which the steam is generated. Hundreds of boilers, now unable to do the work required of them, may be retained by their owners if this device is used. There can be no question as to durability, for experience has shown that the circulation of water being maintained through the pipes they will not burn out any more readily than the flues of a boiler. It can be as easily attached to marine or

locomotive as to tubular boilers. The low cost for which this apparatus can be furnished will, it is claimed, make its use universal as it soon pays for itself.

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LEAD ASHES, LEAD SLAOS, SULPHATE OF LEAD, HARD LEAD, BRASS SLAOS AND ASHES, COPPER REGULUS, MATTE, SCORIA, TIN ASHES, TERNE ASHES, &c., and MIXED ORES or REFUSE, containing LEAD, COPPER, TIN, or ANTIMONY.

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AUSTRALIAN TIN—PRIZE MEDAL, 1877.

THE UNDERSIGNED IS PREPARED TO EXECUTE
ORDERS FOR THE CELEBRATED

"KANGAROO" BRAND.

S. L. BENSUSAN.

Kangaroo Tin Works, Sydney, December, 1878.

TO CAPITALISTS.

THE SUM OF £7000 CAN BE INVESTED IN A
VALUABLE GOING CONCERN, with reasonable certainty of at least being doubled during the present year. The property is a LEAD MINE, on which a very large sum has been expended, and which is already making substantial returns, meeting working expenses. There is a large quantity of rich lead ground laid open, which is being monthly added to by the driving of levels. Even at present low prices the ore of this mine fetches above £14 per ton, and as the market for lead is rising increased quantities will shortly be sold at higher prices, leaving large profits.

There is an EXTENSIVE PLANT OF EFFICIENT MACHINERY, &c., nearly all new in the last three years. The whole capital to pay dividends on of the present company is only £13,500, but a much larger sum has been expended on the property by former parties. An investment promptly made can scarcely fail to greatly increase in value in a few months. Several parties can subscribe the above amount.

Van Lead Mine was bought in 1868, and in a very short time the 12,000 shares of £4 1/2 each rose to £80; dividends since paid, £23 per share, and the present price of 15,000 shares, £20 per share. Great Laxey was bought in 1863; the 15,000 shares of £4 each soon rose to £22; dividends since paid, £30 per share, and present price, £17 per share. Roman Gravel was bought in 1871, and the 12,000 shares of £7 10s. each rose soon to £22; dividends since, £7 1/2 per share, and present price £29, &c.

The Mine in which an interest is now offered is in only 9000 shares, and the price would not exceed £2 per share if purchased without delay. Full particulars and every facility for investigation given.

Address, in first instance, "E. 82," Address and Enquiry Office, "Times" Office, E.C.

THE GEOLOGICAL SOCIETY.—Mr. W. Brenton Symons, of Truro, a member of the Institution of Civil Engineers, and managing director of the Serrian Copper Mines, has been admitted a Fellow of the Geological Society of London.

COAL IN FRANCE.—A French official return states that the production of coal in France last year was 17,096,500 tons, as compared with 16,804,500 tons in 1877.

ARTIFICIAL FUEL.—The chief difficulty in the way of practical and economical manufacture of artificial fuel has hitherto been the want of a suitable binding material giving the necessary cohesiveness and consistency to the fuel. Gas pitch has been generally used for the purpose; but to obtain the necessary cohesion and consistency there must be added to the small coal, according to the quality, from 5 to 10 per cent. of pitch, at least 8 to 10 per cent. being required if the briquettes are to be transported considerable distances. Owing to the relative limited production of pitch, its price rises as the manufacture of artificial fuel increases to such an extent as to preclude its use for economical reasons. The invention of Mr. Remy, of Paris, has for its first object to overcome this difficulty, and consists in manufacturing the fuel of a combination of very small coal and a milk of lime of a composition suitable for giving the necessary cohesion to the fuel. The inventor erroneously supposes the employment of lime in the manufacture of artificial fuel to be novel, for several similar patents have been previously described in the Journal. The second part of this invention relates to the special form given to the blocks or briquettes of artificial fuel, and consists in grooving them on one or both of their opposite faces with parallel grooves running lengthwise or crosswise, or both, so as to intersect one another to enable the blocks to be readily broken up into smaller pieces without waste. The grooves may be of V, half round or other form, but the V form is found best in practice. This facility for breaking up the fuel is of great importance, as it enables the consumer to divide the blocks into pieces of regular shape and uniform size, and so adapt the fuel to his requirements. The briquettes may be readily broken by striking it against the edge of the coal-box for instance, so that the blow takes effect just along one of the grooves. The grooved briquettes are made in moulds by hand or by machine; they are eminently suited for domestic use, whether in open grates, closed stoves, or kitcheners, and are also adapted for burning in steam boiler, puddling, blast, and other furnaces, for forge, and other fires generally.

LEAD MINING IN THE MOLD DISTRICT.—The late Captain Joseph Lyle, one of the most successful and enterprising miners in Cornwall, and one of the most liberal supporters of the mining interest of the Mother County, was as happy as pointed in his expressions, as quaint and peculiar in his aphorisms; and many well remember one of his favourite "sayings" whenever questioned as to the value of a mine—"Never select one in a district where the veins resemble strings instead of lodes, as Nature stands true in all her workings; even that as man could do no good without sinews and muscles, so lodes without compass and strength possessed no means of containing minerals in paying quantities."—In fact, he advocated capacity—i.e., power, grasp, and scope, instead of the ephemeral gasps and struggles of inept mining in districts destitute of mineral wealth, which, unfortunately for *bona fide* and legitimate enterprise, have cropped upon the scene solely for the advantage of promoters in by far too many instances. In the case of the Lead Era Mine the report of Capt. Arthur Waters, of Roman Gravel, Leadhills, and other substantial mines, confirms these views, so that Mr. F. R. Wilson and his son—both well known in the mining world, who are determined to recognise no undertaking which does not possess the elements of success—are both officially connected with this enterprise. It is of the first moment with these gentlemen to introduce only properties that become prizes of importance. Instances of mishap must necessarily occur in mining as in every other speculative industry; but in the case of the Lead Era the Messrs. Wilson are considered to possess a property likely to become a compeer of the Miners and the Van. The great successes in mining are, as a rule, attained by men of intelligence, earnest thought and research, coupled with undoubted pluck and perseverance. The late Capt. Teague is an example of pluck, as were also Capt. Lyle, the Messrs. Williams, the Daveys, Vivians, and Tredinnicks, in St. Ives Consols, East Croft, Bog, and Trenwith; and latterly the Messrs. Glynne, supported by the firm of Watson Brothers, at South Caradon, Treleavy, Mary Ann, and other profitable mines. The argument advocated is that there must be capacity as well as scope to ensure success in mining; and in the Lead Era Mine there is room for the fullest development of both these qualities.

A LUCKY "STURT."—John White and Thomas Dungey, working at the 130 fm. level in Botallack, had the good fortune on Friday to receive 78/—34/ each for themselves, and 10/ for the boy working with them.

Date.	Mine.	Tons.	Price per ton.	Purchasers.
March 22	Great Dylliff	50	£ 9 16 0	Par Smelting Co.
27	Wye Valley	40	9 12 6	George Burr.
28	Pandora	25	9 11 6	Adam Eytan.

Notices to Correspondents.

* * * Much inconvenience having arisen in consequence of several of the Numbers of the past year being out of print, we recommend that the Journal should be filed on receipt; it then forms an accumulating useful work of reference.

ELECTRIC LIGHT.—With reference to the notice of Mr. Higgins's lamp in last week's Journal, I should be glad to be informed the price at which the lamps can be supplied, whether the cells used are Grove's or Bunsen's, what size they are, and the smallest number of cells that would give one reliable light like that referred to in the article, the lamp being 60 yards from the battery, and what per hour is consumed by each cell used? I should think the light would be admirable for festive gatherings in country mansions, and if the cost for one lamp would not exceed 1s. or 1s. 6d. per hour, I believe a large business could be done in buying them and letting them on hire.—**LIGHT.**

SPRING TRACTION FOR TRAMWAYS.—Can any correspondent inform me whether the system of spring traction for tramways invented some time since by Mr. de Vaux (at least I believe that was the name of the inventor) has ever been practically tested; and if so, with what result? Also, what is the cost of a spring traction apparatus capable of propelling a car two miles without re-winding the spring?—**K. J. Newcastle.**

Received.—"C. M." (Bath): The letter has been forwarded.—The letter of "Miner," on the Holloway Process, can only appear with the writer's name attached—"H. D. H." (Nise).—"D. P. M."—"A. H." (Manchester).—"F. W."—"J. W. H." (Birmingham): We could not answer such a question; we have no power to enable us to do so; very many would like to have such knowledge, for the same reason—"J. H. T." (Halifax).—"J. W." (Glasgow).—"P. S. P." (Dorset-square).—"Peter Provis" (Wheat Gravelly): Next week—"J. H." (Sheffield): The telegram shall be forwarded—"Constant Reader" (Tharls).—"Shareholder" (Wheat Basset).

THE MINING JOURNAL.

Railway and Commercial Gazette.

LONDON, MARCH 29, 1879.

THE ROYAL COMMISSION ON ACCIDENTS IN MINES.

It having been made known that the members of the Royal Commission on Accidents in Mines had determined to visit several mining districts for the purpose of taking evidence on the spot where several serious accidents have taken place, more interest is being taken in the appointment by mining engineers and others than was the case in the first instance. Judging from the composition of the Commission, it is evident that it is intended to take a good deal of what may be termed purely scientific evidence. So far as the Act of 1872 is concerned there appears to be a consensus of opinion on the part of practical men that it has worked very well, and has accomplished all that was expected of it. In many instances neglect of some of its provisions have been followed by serious consequences, but that of course is the fault of those who are expected to see it carried out in its every detail. But no matter what penalties may be attached to a breach of an Act of Parliament, there will always be found persons who will run the risk of setting it at defiance. Previous Commissions and enquiries by committees in both Houses of Parliament were of an eminently practical character, and resulted in the introduction and passing of Acts of Parliament that tended to lessen in a marked degree the number of fatal accidents in coal mines. In 1850 was passed what is known as the first Inspection Act, but it was merely tentative, having been limited to five years' duration. This was followed by the Act of 1855. The result of the latter measure was most satisfactory, for it was found that during the two years 1856 and 1857 there were 2144 deaths from colliery accidents, and the coal raised during these two years amounted to 146,399 tons, whereas eight years later, in 1864 and 1865, there were raised 194,034,088 tons of coal, so that if the deaths had increased in the same proportion as the increase in the quantity of coals raised there would have been 2841.6 deaths, whereas there were only 1851 deaths in these two years, being 990.6 fewer deaths in proportion to coals raised, or a reduced fatality to the extent of nearly 35 per cent. in eight years, when considered in relation to the quantities of coal raised. To proceed a little further we find it recorded that from 1856 to 1860, both inclusive, there were 5089 deaths from colliery accidents in the kingdom, the quantity of coal raised in the same period having been 381,067,047 tons, whereas during the succeeding period of five years 468,548,905 tons of coal were raised, so that if the deaths had increased in the same proportion as the increase in the quantity of coal raised the deaths would have been 6257.3 in number, but they only numbered 4827, a decrease in the fatalities to the extent of 22.9 per cent. in five years. In 1862 we had the Duplicate Shaft Act, which gave most favourable results. During the three years ending with 1862 there were 3178 deaths from colliery accidents, 264,358,164 tons of coal having been raised during the same period, whilst during the three succeeding years there were 286,853,443 tons of coal raised, so that if the deaths had increased at the same rate as the coal raised the deaths would have been 3448.4, whereas they were only 2758, or a reduction equal to 20.02 per cent. in three years, so that the rate of reduction in the number of deaths had been greater since the passing of the Duplicate Shaft Act up to the end of 1865 than it was previous to the passing of that Act. In 1865 a Select Committee of the House of Commons was appointed to report with respect to the working of the Acts relating to mines, and, singular to say, the first witness examined was a gentleman, now a member of Parliament, who is on the Royal Commission—Mr. T. BURR—who then stated that he was a coal hewer at the Choppington Colliery, in Northumberland. He was then in favour of additional inspectors being appointed, and stated that where the rule requiring that an adequate amount of ventilation shall be provided in all the working places in the pits, levels, and workings was fully carried out he could not suggest any mode of legislation by which more could be done for the health of the men. But the rule, he said, was not enforced, and that was where the difficulty was.

Having alluded to what was done by past enquiries by Royal Commissions and Committees we will now notice the Commission which will shortly commence its labours. As we have before stated it will evidently take a good deal of evidence of a scientific character, but we do not expect the results will be at all equal to former enquiries, seeing so much has been done of late years to meet the views of practical as well as scientific men in the safe working of mines. But amongst the points which may be taken into consideration by the Commission are several of an interesting and technical character. Amongst them may be named the sudden outbursts from the floors of mines—an admitted danger—the cause of which has not yet been cleared up, although frequently discussed by the most eminent of our mining engineers. Another subject which has been laid out for the members is with respect to fire-damp indicators. The only instrument yet proposed for indicating the presence of gas is one brought out by Mr. ANSELL, but it has not made any progress in the estimation of those who have the management of mines, and sensitive as it really is we do not believe it will find favour in mining circles under any circumstances even should it be recommended by the Royal Commission. The velocity of the currents of air no doubt will be taken into consideration, and also the use of powder in fiery mines. The latter is always dangerous, and there is every reason to believe that the evidence given with respect to it will be such as to lead to its compulsory discontinuance in certain mines. Blasting where safety-lamps are considered necessary for the safety of the mine and miners we believe has led to a very serious loss of life, and the abolition of it would we feel sure be the means of greatly diminishing the number of fatal explosions. It is true the cost of bringing down the coal by wedge would be greater than by means of powder, but then greater safety would be ensured, and that should be worth something. We may fairly assume the question of appointing additional inspectors will be raised, and there is no doubt one at least of the members of the Commission is in favour of such a course, so that mines should be inspected at certain periods with respect to the ventilation, as well as the system of working, the measuring of air-ways, &c. We consider the taking of evidence in several of the most important mining dis-

tricts will have many advantages over having the witnesses in London, for the Commission will have the opportunity of personally inspecting certain places where something of a special nature can be seen. It is to be hoped the report will be given as early as possible, so that all persons interested will be able to see what additions are proposed to be made to the existing Act of Parliament for the regulation of mines, so that it may be seen whether they are really practicable, and such as will meet with the approval of colliery owners and working miners, and that they are such as are not likely to increase the present cost of getting coal.

COAL IN FRANCE.

We learn this week from a French official return that the aggregate production of coal in France in 1878 was carried to 17,096,500 tons, as compared with 16,804,500 tons in 1877. The production thus increased last year to the respectable extent of 292,000 tons. Even now, however, it can scarcely be affirmed that France is a first-class coal producing country. An annual production of 17,096,500 tons compares very poorly with the 120,000,000 tons turned out annually from the coal mines of Great Britain, or the 40,000,000 tons raised annually from the soil of the United States. The odd part of the business is that, in spite of some efforts to render herself independent of foreign coal, France has still to import almost as much coal as ever from her neighbours, and that moreover she appears to be content to do so. The French have not yet overcome, apparently, their natural disinclination to engage in coal mining industry, and the soil of France still gives up its coal wealth as reluctantly as ever. The country which has the most coal wealth in years to come is destined to the most future greatness; at least so say some clever theorists. If this is really the case France is not discounting her future, but economising it; and when England has raised her last ton of coal—which will possibly be just about the time at which MACAULAY'S New Zealander will take up his point of observation on London Bridge—France may be the mistress of the coal markets of the world.

We are peering, however, into such a remote future that our peering does not, we must confess, amount to very much. Even if the coal wealth of Great Britain should be exhausted a few hundred years hence, French coal will still have to sustain the competition of the coal of the United States, the coal of Canada, the coal of Borneo, the coal of Australia, the coal of New Zealand, and the coal of many other countries, now in quite an infant stage of development. Moreover, the French themselves may have just as little turn for coal mining 500 years hence as they have at the present time. Nations develop themselves not so much according to their natural resources as according to the natural bent of their inhabitants. Thus the North of Spain has possessed from countless ages vast stores of excellent ironstone, but the Spaniard loves far better to have a flock of sheep, or grow fruit and grapes, or raise wheat, than to plunge into the bowels of the earth and dig for ironstone. It has remained for the more money-loving, hard-working English race to turn the ironstone of Northern Spain to profitable account; and it is not at all impossible that some day or other English capital may find profitable employment in working French coal just as it now fruitfully is dealing with Spanish ironstone.

We have observed that the French are still largely dependent upon foreigners for the coal which they consume, but this result is not wholly attributable to the sluggishness with which the French utilise their coal resources; but it is also due to some extent—and to a very large extent also—to the vast development of steam power in France. Amid all their national convulsions the French have always had an eye to the main chance, and an intelligent application of steam power has tided them over many vicissitudes and many troubles. Of course, steam has been unable to recall to life the unhappy victims of political fanaticism, and the working power of these unfortunates has been lost to the State. But a compensation from a national point of view has been found in the docile labour of the unwearied steam-engine. At once a rich agricultural country and an important manufacturing community, France has astonished the world by the ease with which she has sustained public misfortunes which would have crushed other weaker nations. This result has not been attained without a greatly extended resort to steam power, and this growth of steam power having rather outstripped, upon the whole, the production of coal in France, the French, after 20 years' grumbling upon the subject, find themselves as much dependent as ever upon foreigners for the coal which they consume, and possibly even a little more so.

COMPENSATION FOR INJURIES TO SERVANTS.

No less than four Bills have been introduced into our Houses of Parliament and read a first time, having for their object the making of employers liable for injuries sustained by their servants. All the Bills are confined to two or three comparatively short clauses, and although in some respects they bear a likeness to each other, yet in others they are totally dissimilar. The subject is one surrounded with great difficulties, and a desire has been shown by some of the promoters to adopt a middle or moderate course in dealing with the relations of masters and servants, but the least difficulty to be surmounted is that relating to persons in a "common employment," and how far a master should be held responsible for the acts of individuals working together. The Bill of Mr. BURR, M.P., the representative of the mining body, takes what may be considered an extreme bias in favour of the working classes, for by it he provides that it shall not be any ground of defence that the person "by whose negligence the injury or loss of life is alleged to have been occasioned was employed in a common employment with the person injured or killed, or that the risk of injury or loss of life was knowingly or voluntarily incurred by the person injured or killed in the course of his employment." We need scarcely say that Mr. BURR's Bill stands no chance of becoming law, seeing that it would make employers liable for almost anything that might occur to a workman whom he employed. EARL DELAWARE'S Bill would give workmen in the employ of a master, but overlooked by deputies, the same claim in the case of accidents which they would have if the master were attending to the work himself. In Mr. BRASSY'S Bill the employer is held liable for injury or loss of life owing to defective machinery, or by reason of the negligence of any person who has superintendence entrusted to him, or by anything done or made in obedience to rules or bye-laws of the employer. The Bill brought in by the Attorney-General a few days since, and with some modifications will no doubt be carried, consists of only two clauses. The first clause defines the term "employer, and what is to be considered as a servant in authority." With regard to a mine, any person entrusted as agent or manager, or in any like office with the management of the mine, or of any particular pit or colliery, whether above or underground, and no other person. The second clause provides "if any person in the service of any employer in any railway, mine, manufacture, or works, is injured or killed by the negligence of a servant in authority, and under circumstances in which, but for the fact of both persons being in the service for the same employer, the person injured, or if he was killed, his personal representative would have a right of action against the employer, such right of action shall subsist, notwithstanding the fact of the common employment."

This is certainly carrying the liability a good deal farther than it is at present, and whilst adding greatly to the responsibilities of employers places the men in a better position than many persons will say they are entitled to. A "servant in authority" may be of a vindictive nature, and if from some cause or other before leaving his employ he may do something that will inflict a heavy penalty on the employer, where such was done willfully and maliciously under the circumstances stated, we think that liability should rest upon the employer. The Bill is in every way in favour of the workmen, and places the person who employs them in a far worse position than at present. Yet we find that it has in no way satisfied the class it is intended to benefit, for at the meeting of the Parliamentary Committee of the Trades Union Congress to consider the Bill, it was resolved unanimously—"That no measure dealing with the law of employers for injuries sustained by their workmen could

be accepted as a satisfactory solution of the question, while it is admitted as a ground of defence in any action brought for the recovery of damages in respect of bodily injuries or loss of life that the person by whose neglect the injury or loss of life was alleged to have been caused was working in common employment with the person so killed or injured." We certainly think that the Government has gone fully as far as it can for the purpose of meeting the wishes of the working classes, and that any greater extension in the direction required by the Trades Unionists would result in the loss of the Bill altogether, for as it is it will find many opponents in the House of Commons.

THE COPPER TRADE.

During the quarter ending Mar. 31 the quantity of copper ore, the produce of Cornwall and Devonshire, sold at the Cornish Ticketing, was 10,598 tons, which contained 731 tons 16 cwt. of fine copper, and realised 33,029. 12s., being equal to an average of 3l. 2s. 4d. per ton of ore, and 45l. 2s. 8d. per ton of copper in the ore. During the same period the British, colonial, and foreign ores sold at Swansea amounted to 5158 tons, which contained 559 tons 15 cwt. of fine copper, and realised 28,634. 8s. 6d., being equal to an average of 5l. 10s. 4d. per ton of ore, and 51l. 3s. 1d. per ton of copper in the ore. The average produce of the ore sold at the Cornish Ticketings was 6½ per cent., whilst that sold at Swansea gave an average produce of 10 13-16 per cent. From this it will be seen that the aggregate sales by ticket were 15,756 tons of ore, containing 1291 tons 11 cwt. of fine copper, and realising 61,664. 0s. 6d. The subjoined is a summary of the periodical sales at the Cornish and Swansea Ticketings respectively. The ores sold at the Cornish Ticketings were—

Date.	Standard.	Prod.	Price.	Per unit.	Tons.	Fine cop.	Amount.
Jan. 2...	£ 83 14 0	...	7½	£ 3 6	8s. 11½d.	1,219	96t. 6c. £ 3,873 6 0
23...	86 9 0	...	6½	3 19 0	8 11½	2,139	144 4s. 6,463 10 0
Feb. 6...	83 6 0	...	7½	3 3 0	8 9	1,111	78 15s. 3,504 8 6
20...	85 13 0	...	6½	3 1 0	9 3½	2,389	161 19s. 7,261 15 0
Mar. 6...	83 13 0	...	6½	2 19 0	8 8	1,318	89 15s. 3,882 8 6
20...	85 7 6	...	7½	3 7 6	9 5	2,379	170 17s. 8,044 4 0

Total for the quarter	10,598	731 16	£33,029 12 0
Quarter ending December, 1878	12,652	866 17	£1,459 8 6
Quarter ending September, 1878	11,463	804 8	£9,397 11 6
Quarter ending June, 1878	11,746	869 9	£1,999 12 0
Total for the year	45,859	3262 10	£155,879 3 0
Showing a quarterly average of	11,465	815 12	£8,969 16 0
Corresponding quarter, March, 1878	12,330	805 18	£5,407 12 6

The ores sold at the Swansea Ticketings were—

Date.	Standard.	Prod.	Price.	Per unit.	Tons.	Fine cop.	Amount.
Jan. 1...	£ 76 12 0	...	7½	£ 3 15 6	10s. 1d.	1,283	96t. 6c. £ 4,838 12 0
21...	74 19 0	...	18½	8 3 6	10 6	1,281	198 12½ 11,075 11 0
Feb. 25...	73 1 0	...	9½	4 16 1	9 8½	1,017	100 13½ 4,888 9 0
Mar. 25...	73 6 0	...	7-18	5 6 11	10 3	1,577	164 4s. 8,431 16 0

Total for the quarter	5,158	559 15	£28,634 8 6
Quarter ending December, 1878	4,808	512 12	£6,721 10 0
Quarter ending September, 1878	8,600	702 19	£5,166 5 6
Quarter ending June, 1878	9,185	777 6	£1,755 14 6
Total for the year	27,751	3552 11	£132,277 18 6
Showing a quarterly average of	6,938	688 3	£3,069 9 8
Corresponding quarter, March, 1878	13,076	958 2	£5,469 10 6

FRENCH DUTIES ON BRITISH PRODUCE.—Exporters of British goods to France should now understand that a most important change has taken place with respect to the duties charged from January 1 last, which were considerably augmented from what they were before that date, consequent upon the expiration of the Austro-French treaty of commerce. The question of the increased duties was discussed in the French Senate, if we mistake not, on March 13, when it was decided by 233 votes to 1 that—"The customs tariff of duties upon articles enumerated in the schedule annexed shall be re-established as far as those countries are concerned which are united to France by conventional tariffs so long as those conventional tariffs remain in force." The schedule alluded to includes steel of every description, springs, saws, files, tools, wire, &c. Article 3 provides that—"The Minister of Finance is authorised to repay importers of the articles mentioned the difference between the duties existing before and after January 1, 1879, provided proof be given that such goods were ordered before January 1, 1879." The consequence of this change is that the old duties will be reimposed, and that all persons who have paid the increased duties may have the difference refunded to them on application at the office of the Minister of Finance. The change it appears has been notified to the Marquis of Salisbury by Her Majesty's Ambassador in Paris by means of an extract from the French Journal Officiel. The new French law it appears is followed by a decree of the President of the French Republic containing regulations relative to the exemption from customs duty under the second article of that law in favour of materials for building, equipping, or repairing merchant ships. The alteration will be of considerable importance to many of our manufacturers, for in unwrought steel alone our exports to France during the first two months of the year were of the value of 18,632, and in hardware and cutlery 20,037. The increased duties were beginning to be felt by manufacturers in Sheffield and other districts, so that the return to the old tariffs will be fully appreciated by them, as well as by those dealing with us in France.

THE METAL TRADE IN AMERICA.—Messrs. T. J. Pope and Brother, the well-known metal merchants of New York, under date March 12, write—"We have to report a generally active business, with improving prices and increasing confidence in the future of markets. The quantity of new enterprise projected is unusually large, and gives promise of a year's business of unusual volume. Metals are in all countries considered by the ablest judges to be at the dead level of prices, and below the average producing cost, even with labour as badly paid as it is in every manufacturing country. In the United States there are 12,000 miles of new railroad under project; the arrangements, alterations, renewals, and restocking of the old railways going forward are very unusually large. Old stock of all the metals is utterly exhausted, and the demand for consumption from new metals will, of course, be relatively larger than ever before.—Ingot Copper: Light stocks, tendency upward.—Pig-irons: The transactions in foundry and forge pig metals have been very large; the movement has been greater than at any time since 1871 and 1872, and it seems safe to look for higher ranges in prices.—Scotch pig-irons are dull, with few importations, American pig-irons seeming to supersede them.—Old rails are in demand, but very scarce; there are no stocks on the seaboard. The stocks of old iron, wrought and cast, all through the country are completely exhausted.—Lead is dull, with large buyers for lots at prices below the views of holders; prices are, therefore, nominal. Some enquiry for export is again being made, but at prices below those current. Holders of lead, however, are looking for a large export sale. Stocks are only moderate.—Tin is in good demand, but the large quantities on way make buyers cautious."

LEAD MINING IN SHROPSHIRE.—Advantage is about to be taken of the improved prospects of the lead market to make some further developments in the Tankerville district. It appears that the lease and plant of the Perkins Beach Mine, which has long been recognised by practical miners as one of the rich mines of the district, lying as it does between and contiguous to the Snailbeach and Tankerville, have now been purchased by a private gentleman, who intends to take in a partner to develop it without the assistance of a public company. Within the last month a new lode has been discovered on the side of the hill some distance from the easterly workings, and if the weather continues fine it is intended during the coming week to open upon it in several places to get the true bearing. In two reports recently made by Capt. S. M. Ridge he states

that he has had all the men opening upon the back of the new lode on the top of the hill, where the man informed him he had found the lead; they found a very large, strong, and kindly lode, quite 15 ft. wide, and there was a great feed of water bursting out of it, but they have found no lead; the lode, however, is all opened upon. As to the eastern workings, he says there has been a slight improvement for lead ore in the breast they are driving east upon Cross's lode, to the east of the top engine-shaft, and he trusts it will continue to improve.

REPORT FROM CORNWALL.

March 27.—When last Thursday we wrote that it would be in the interests of mining that there should be some slight pause in the upward movement of the tin standards, we hardly anticipated that our views would be so speedily confirmed by what has since taken place. The standards, it is true, remain at the point at which they were last officially fixed, but for all that they are 2l. below the prices which some of the smelters were giving in the early part of last week; and this, as it now appears to have been, injudicious and too hasty advance in the main responsible for the reaction and unsettled state of affairs which has followed. To hasten slowly in mining, as in most other matters, is to make the best speed, and the mischief of too rapid a rise—one which the circumstances of the moment do not justify—is that it affords an opportunity which those to whose advantage it is to knock down mining property to the lowest limits are never slow to turn to account. Whatever may have transpired during the last few days nothing whatever has happened to shake the confidence which those who are really well informed feel in the present condition and future prospects of mining enterprise.

Here is a fact which all interested in mining should not fail to bear in mind, and to keep steadily before them. Especially do we commend it to the large class who, as a rule, have no opinions of their own, and are all too apt to follow the leader of the hour, to their own injury as well as to other people's. It is this—That since the depression set in so great have been the improvements effected in mining plant and operations, and the consequent economy, that even at present prices there are hardly half a dozen tin mines in fair work in the county that cannot at the least pay cost. Of course, this result is largely due on the one side to the weeding out of the sickly concerns, but still it on the other arises from a steady persistence in a course of progress the results of which are as remarkable as they are gratifying. We do not put this forward as in itself essentially new, but as a fact which all actively engaged in mining operations will recognise as correct, and which, if it is properly noted and acted upon in mining circles generally, will contribute much to the steadiness which we all desire to see who have the true interests of mining at heart. To put it in other words, it is a fact that tin mining at the present moment is less a speculation than it ever was.

Devon Consols has had another strike, but fortunately it has not lasted long; in this case our sympathies are far more nearly in alliance with the views of Mr. Peter Watson than they were on the occasion of his attempting to revive the five-weeks month, though we must regret anything that leads at the present juncture to the reduction of the rate of wages, which is already far too low. However, a mine cannot pay more than it can, and half a loaf is better than no bread. The strike began on Saturday last, when the men were told that there would be another reduction in their wages, amounting practically to about 10 per cent., and it was intimated that they would be further required to work on "Maze Monday," which is the Monday after pay-day. This became known before the survey, and the men held a meeting in the morning, when they unanimously resolved to decline taking any bargain with the condition of working on "Maze Monday." On Saturday, when Capt. Isaac Richards read the contracts from the setting-book, two of the miners, who acted as spokesmen for the whole, said that when Mr. Watson came down some time since he intimated that on the sale of the arsenic, of which they had a large stock then in hand, the wages should be increased. Since then the arsenic had been sold, and instead of their wages going up they had to submit that day to another reduction of 10 per cent., and this resolution to abolish "Maze Monday" came directly upon it. They considered the conduct of the directors was shameful, and they had not treated them like men.—Mr. Morris, the resident director, and Captain Isaac Richards tried to persuade the men to take their bargains, using as an argument the present depressed state of trade, upon which the men asked to be allowed to withdraw, and consider the matter. After a short time they returned, and said that they were unanimously determined not to work under the present resolution of the directors. The spokesmen said it was not so much the simple question of "Maze Monday" as the succession of "cuts" which they had to submit to, and it was the last feather that broke the camel's back.

Now, as to "Maze Monday," we have no sympathy whatever with its being made the object of a strike. There have been far too many "Maze Mondays," and when any class of men talk of their wages being low, we have a right to ask what they do in return. We quite agree that wages as a rule are far too low; but, as we have said, there is a limit beyond which the paying power of a mine cannot go. When this limit is reached, if wages are to be kept up to their nominal rate, that end may be attained by the miners doing a certain percentage of additional work. It is a step in this direction to get rid of such really waste time as "Maze Mondays." The men have estimated their wages at 12s. 6d. a week; Mr. Watson puts it at 14s. a week for eight hours daily, and this, as he truly says, is higher than the average of many Cornish mines. However, after standing out until Tuesday, the men wisely determined to return to work. They will have far more sympathy in this course than they would have had in standing out, though many regret that they did not have the alternative course before them of being asked to work more hours at the old rate of wages. These are not times in which steady wages, low as they may be, can be safely refused by the labouring classes.

TRADE OF THE TYNE AND WEAR.

March 27.—The weather has been very stormy on the North-East coast the past few days, but shipments of steam coal have been considerable, and the works fairly employed. The demand for house coal has also improved, caused by the very severe winter weather again experienced. There has been an improvement in the foreign demand for steam coal since our last, and orders are coming in for Cronstadt, St. Petersburg, and other ports. The Coal Trade, however, is still in a depressed state for the time of year, but orders are coming in, and it is expected that in a short time there will be a considerable improvement. As we have remarked before, there is some probability that a further reduction of prices will be proposed to the miners, and should this be arranged there is little doubt that this trade will get into a more healthy state. At some of the large works full time or nearly so has been made; this is the case at Cambois and Delaval and some other favoured places, but at many other works there is still only partial employment. In Durham matters are extremely dull. The extensive works at Peshier and Biddick have been closed for the present, and are not likely to be re-opened for some time at least. Many other large works will be closed even if the men submit to the proposed reductions, unless concessions are made by the lessors of the mines. Many of the leases entered into a few years ago contained tonnage rates much too high for the present times, and unless those rates are reduced very considerably the lessees will certainly relinquish the works in many cases.

The Iron Trade continues very firm, and No. 1 pig has again reached 40s. per ton, and the tendency is still upwards. The shipments are good, and the exports for the month when made up will show one of the largest returns ever made, and stocks reduced considerably. The steel question continues to attract much attention, but practical men prefer to wait the result. Steel can be made of Cleveland iron, and has been made for many years, but no method has yet been invented to make it commercially successful, unless that of Bolckow, Vaughan, and Co. comes within that category; and

many believe that it does, the experiments so far having exhibited great promise. The shipments of fire-bricks and fire clay goods generally abroad are improving, but this trade has been very dull during the past winter. The chemical trade continues fair, although a slight lull has taken place in the demand for those goods during the past week.

At Middlesbrough, on Tuesday, the market was much quieter than has been the case for some weeks past. There was very little iron changing hands, and altogether the trade is much less satisfactory. Makers are not at all pressing iron on the market. They have sold pretty freely during the early part of the month, and now are offering but little, and the majority ask late rates. The business done is, however, chiefly by merchants, at about 6d. per ton less than late rates. Sales of No. 3 are made in small lots at 35s. 6d., and No. 4 for 34s. 6d. net, rather less being quoted by the "beers." The shipments of pig-iron, though less than in the beginning of the month, have still been large, and everything goes to show that there will be a reduction of stocks at the end of the month. The deliveries on Scotch account, though still considerable, were, however, nearly 1000 tons less last week than in the corresponding week of the previous year. There have been fair continental deliveries. Warrants also have been a great deal more dealt in of late. Cleveland makers have lately found considerable competition in the Staffordshire and Lancashire markets from Lincolnshire and Derbyshire pigs, which have an advantage in the rates of transit, being nearer at hand. The taking out of a patent by Bolckow, Vaughan, and Co., and the assurance of the Chairman of the company that their experiments in making steel from Cleveland pig-iron had been eminently satisfactory, and that it was done at a very low cost, is encouraging, though many practical men still refuse to give in their adhesion to the new system until it shall have been further developed and tried on a large scale, which the company intend, we understand, to do at their Eston Works, where they are already turning out 2000 tons of steel rails per week from a mixture of Spanish and Cumberland ores. Though there have been a few enquiries for finished iron, the trade does not make headway, and specifications and orders for plates come in slowly. The condition of the Iron Shipbuilding Trade is also very unsatisfactory. Ship plates do not rally in price, and are still quoted as low as 5l. by some manufacturers, common bars being 4l. 17s. 6d., and angles at about the same figure, less the commission. There is some little enquiry for foundry work, chiefly pipes, water and sanitary. The notices of a reduction to the Durham miners have been issued, and there are fears that some of the pits may be laid off.

REPORT FROM MONMOUTHSHIRE AND SOUTH WALES.

March 27.—It seems apparent that masters and men in the Coal Trade intend to settle amicably any differences which may exist with regard to the wages rate. At any rate the employers' and colliers' representatives on the Sliding Scale Committee have met at Cardiff. As has been already hinted would be the case, the employers asked for a 10 per cent. reduction in wages. The men met them with a counter proposal to accept a 7½ per cent. reduction for steam coal and 5 per cent. for house coal workers. Ultimately, however, they agreed to take a 7½ per cent. decrease all round. This the masters declined, and said nothing but a 10 per cent. reduction would satisfy them. Some further matters were discussed, and the question of further modifying the scale having been introduced, no practical decision was come to, but the men have called a delegate meeting, which will shortly consider the question. One thing is that the masters promise, if the men accept their terms, to guarantee that no further reduction shall be made this year, even if prices for coal are reduced. This last offer is well worthy of consideration. The Blaenavon colliers have now passed a vote of confidence in Mr. Halliday.

At the No. 1 Pen-y-Darren Pit, belonging to the Dowlais Company, an explosion of gas has occurred, from what cause is not yet known. One man was killed, and six or seven injured more or less seriously. A man named Rees Williams has been fined by the Blackwood magistrates 5s. and costs for reckless—almost fatally reckless—conduct at the Celynen Pit, Abercarn. He tampered with the fan, and so caused a tram to fall down the shaft. Luckily, no one was hurt.

Two colliery companies have recently been ordered to be wound-up by order of the Court of Chancery, in each case voluntarily. Allusion is made to the Ty Pica Colliery Company, and the Dunraven Adare Collieries Company.

A gold watch and chain, drawing-room clock, and other articles, valued altogether at over 100l., have been presented at Aberdare to Mr. Llewellyn Llewellyn, late general manager of the Powell Duffryn Company's collieries. Mr. Llewellyn has recently left for another appointment. Mr. John Havard, manager of the Lower Duffryn Pit, made the presentation.

Some interesting experiments with safety lamps took place this week at Newport. Mr. W. E. Teale, inventor of the "Protector" safety-lamps, which are manufactured by the Protector Lamp and Lighting Company, made these experiments with a view, for one thing, to show that improved light, besides additional safety, is given; and also that the collier cannot tamper with the lamp, for immediately he does so out goes the light. Again, it is contended that the use of these lamps is economical. Among those gentlemen present were Messrs. J. Jacobs, mineral agent, Cwmbran; Partick, M.E.; C. Pond (manager Abercarn Colliery); Donald Baird (Assistant Inspector of Mines); T. Foster Brown, C.E.; W. Needham, M.E.; R. E. Strelly, M.E., &c.

The Iron Trade during the past few days has manifested no change of importance. It is true that there have recently been some fresh orders lodged in the district, but they are, as a rule, small, and taken at such prices as to leave, to say the least, scarcely any margin for profit. The clearances during the week have not been large, and mainly to Hummelingen, Valencia, and Rio de Janeiro. The demand for railway iron is, of course, practically nil. Bars are dull, and sell at late rates. The demand for steel rails is quite up to the average. There is a talk of soon commencing some good orders at the Landore Works. In the Tin-Plate Trade prices are not quite so firm. A meeting of the Associated Masters has been held at Swansea, when it was resolved that the present price of 10c cokes at Liverpool should be maintained. It was also decided to further restrict the make as occasion required. A section of the Melingriffith tin-plate workers are still resisting the 10 per cent. reduction sought to be imposed.

Considering the present depressed times it is not surprising to find that a deputation of colliery proprietors has waited upon the directors of the Great Western Railway, asking them to reduce rates on their various branches. Sir Daniel promised to consider the matter, and certainly any concession, however small, would be much appreciated by colliery proprietors at the present time. Prices for all descriptions of coal remain stationary. The demand for steam qualities is about up to the average, and shipments have been rather larger than usual, those to the Mediterranean ports being quite up to the usual quota. House qualities are again a little brisker, and there is a movement apparent in the demand for patent fuel.

THE TIN-PLATE TRADE.—A special meeting of the tin-plate trade was held on Monday at the Mackworth Arms Hotel, Swansea, Mr. George B. Strick in the chair. The following gentlemen were also present:—Messrs. P. W. Flower (Leach, Flower, and Co. and Copper Miners Tin-Plate Company), R. K. Pritchard (R. B. Byass and Co.), J. S. Tregoning (J. S. Tregoning and Sons), J. Jones Jenkins (E. Morewood and Co. and Swansea Tin-Plate Company), Richard Hughes (Landore Tin-Plate Company), William Williams (Llan-samlet Tin-Plate Company and W. Williams and Co.), W. H. Francis (Amman Iron Company), P. S. Phillips (Pontymister and Aber-tillery), David Davies (Beaufort Tin-Plate Company), David and Charles Morris (Morris and Sons), William and Edward Morris (Smith, Morris, and Thomas), Daniel Edwards (Daniel Edwards and Company), Daniel Whitehouse (Abercarn), E. R. Daniel (Cwmfelin Tinworks), William Thomas (Burry Tin-Plate Company), T. W. Jenkins (Glamorgan Tin-Plate Company), Richard Jenkins and Edward Davies (Port Talbot Tin-Plate Company), —Vibert (Joshua Williams and Co.), —Hopkins (Lawe Tin-

Plate Company), David Williams (Pontypool Tin-Plate Company and Mould Works), Josiah Griffiths (Pontardulais Tin-Plate Company), —Llewellyn and —Newman (Cambrian Co-operative Tin-Plate Company), David Owens (Morriston Tin-Plate Company), David Gray (Llwydarth Tin-Plate Company), and Wm. Jones (Llantrisant Tin-Plate Company). Matters having an important bearing on the interests of manufacturers were discussed, and perfect unanimity prevailed as to the course to be adopted for their protection. It was decided to maintain the present price of 17s. for 10c coke in Liverpool, and most of the makers agreed to still further restrict the output should necessity for so doing arise. A vote of thanks to the Chairman and his colleagues for so promptly calling the trade together was proposed, and carried unanimously.

REPORT FROM NORTH AND SOUTH STAFFORDSHIRE.

March 27.—Very serious news for South Staffordshire is the circumstance that at a meeting of the Tipton District Committee of the Mines Drainage Commissioners, held in Wolverhampton on Wednesday, it was resolved to recommend to the Commissioners at their next meeting, on April 2, that the engines now worked in the Tipton district should be stopped in fourteen days from Saturday next. This determination has been come to because the funds of the Commission are exhausted, and there is only too much room to fear that the Commissioners will perform have to act upon the committee's recommendation. If they do, authorities competent to judge see nothing before them but the drowning out of the collieries in the Tipton district. The gravity of the position, if such should prove to be the case, is almost incalculable. The colliers in the Cannock Chase district have induced the employers to submit the matter of the 3d. drop to arbitration. The demand for fuel at the furnaces has not improved, nor has it materially fallen off in the last few weeks. The furnaces last reported as blowing remain at work, but furnaces that were understood to be in course of preparation for relighting are still at that stage, and it is not unlikely that any advance upon the present number will be made until after the ensuing series of quarterly meetings of the iron and coalmasters, which will begin at Wolverhampton a fortnight hence—namely, April 9. That meeting is looked forward to with some anticipation by makers of both crude and finished iron; but men of experience are this week shaking their heads, when the sanguine ones would expect too much. As to finished iron, we are suffering a little just now from the closing of the quarter, all buyers being anxious to get their purchases into the midsummer quarter account. It is, therefore, pretty confidently anticipated that there will be a better enquiry so soon as this month is out. The degree of improvement few will venture to predict with any feeling of certainty. Tin plates are in large demand at a rise of 2s. per box upon the late prices. Messrs. David Jones and Sons have this week shut down their Herbert's Park Ironworks, near Bilston, in consequence of being unable to carry on at a profit. At about last Christmas the firm, who compounded some time ago with their creditors, obtained their discharge upon paying a further 2s. 6d., making the dividend 10s. 6d. in 1l. Lloyd's Banking Company are understood to have a mortgage upon the works.

The directors of the Spon Lane Colliery Company in their annual report, just issued, state that the hope expressed at the last annual meeting that coal would shortly be discovered has been realised. Unfortunately, however, further explorations where the coal had been met with proved that at that part only the bottom measures of Thick coal existed the Thick has been found on the south side, varying in thickness, but being near the boundary only a small area was available. On the north side the coal varied in thickness from 2 ft. to 26 ft. The Heathen coal underlying this was of good quality and thickness. Further search for Thick coal revealed several large blocks.

Comparatively little work is being done at the ironworks and collieries in North Staffordshire. This week notice has been issued at the Clough Hall Ironworks, Kidsgrove, to terminate all contracts at an early date. It is believed that a reduction in wages is to be enforced, the masters finding it impossible to carry on as at present without loss.

SALE OF SHARES IN PUBLIC COMPANIES.—At their sale rooms, in Birmingham, on Wednesday, Messrs. Ludlow, Roberts, and Weller sold by auction a number of shares in public companies. The first lot offered consisted of seven shares in Lloyd's Banking Company (Limited). They were sold for 23l. each, and afterwards 100 shares in the same company realised 23l. 1s. each; 34 shares in the Birmingham and Midland Bank were knocked down for 80l. each; 25 shares in the Exchange Buildings Company at 27l. 12s. 6d.; 120 shares in Perry and Co. (Limited), 10l. paid, at 11l. 5s. each; and 10 shares in the Union Bank (5l. paid) at 5l. 12s. 6d. Ten shares in the Birmingham and District Land Company (Limited), 12l. 10s. paid, were offered for sale, but were bought in. The next offered were 400 Midland Railway 10l. Four per Cent. Preference Shares (1878), upon which 7l. per share had been paid, the shares being convertible into Midland ordinary stock at the option of the owner in 1885. Of these 200 were sold at 7l. 10s. each. Fifty A shares in the National Arms and Ammunition Company (Limited), 3l. paid, were purchased at 23s. each, and 15 Six per Cent. Preference shares in the Midland Railway Carriage and Wagon Company at 10s. per share.

REPORT FROM NORTH WALES, SALOP, AND CARDIGAN.

March 27.—I had not intended to refer again to the Cambrian Mines, but the letter of "A Shareholder," in the Supplement to last week's Journal, added to the misrepresentation of my purpose and remarks by Mr. Absalom Francis and "Miner," compels me to do so in self-defence. Now, at starting let it be fairly understood that I have not said a word against the mines as such, for it is quite possible that both Esgair-fraith and Esgair-hir may be good mines, and yet not be able to pay a good mining dividend, and recoup the outlay on a purchase price of 70,000l. The point to be decided, therefore, is this—Was the discovery said to be made between the time when they were bought by the Aberystwith tradesman for 2500l., and the time when they were sold to the present company for 70,000l., of such a nature and extent as to justify an increase in the price of 67,500l., or anything approaching that sum? I have before me, in Hodgkinson and Co.'s Investment Guide for February, which devotes nearly two pages to the setting forth of the advantage of investing in these mines, an extract from a report or other document written by Mr. Absalom Francis, in which that gentleman says "this vast and great discovery is already made." Now, the simple question I ask is this—What was the size of this discovery? How vast was it? How many fathoms in length and height of ore ground of copper and lead, containing how many tons of each ore to the fathom respectively, were laid bare and actually proved when the mines were sold for 70,000l.? This is a simple question, and Mr. Francis is bound to answer it plainly and unequivocally before he heaps any more abuse on me. I know that I shall be met with the reply—"Oh! but we do not know what the discovery may lead to." Just so, but then those who do not incur the risks are not entitled to a large share of the possible profits, and surely even the combined reports and opinions of Capt. Francis, Glanville, and Hitchens, however practical these gentlemen may be, are dearly purchased at a cost of between 60,000l. and 70,000l.

Now for "Shareholder." He at least confesses that the mines are heavily weighted, although it is difficult to reconcile this admission with his next statement, its "intrinsic worth being far beyond the power of our computation." I will assist "Shareholder" in his arithmetic, and set him a simple sum, which he can answer in next week's Journal if he likes, and if he does not I or some of my readers can for him. The sum is this. Suppose that every other fathom forward of the lodes in Esgair-fraith and Esgair-hir will on being worked yield a profit of 3l. 10s., how many fathoms of these lodes will have to be cut before the purchase money of 70,000l. is recouped to the investors? The answer will be the more interesting if the length of ground to be cut is given in miles, and the height or width of it in yards. I have a right, after the imputation of bad motives accorded me by these gentlemen, to ask these questions, and to expect plain straightforward answers. Besides, such questions are

appropriate ones to be asked in the *Mining Journal*, which is as much the paper of mine investors as it is of mine projectors.

I am sorry to have to record the closing of the Brynkinnall Colliery, near Chirk. During the last six years a pair of new shafts have been sunk, new roads opened underground, about 70 houses for men built, and a branch railway constructed, in the face of much difficulty. The stoppage of the work, taken with the general scarcity of employment, will entail great distress in the neighbourhood. The ironworks have a very cold and desolate look, and seem the relics of a state of things finally passed away. A collier named Hughes has, unfortunately, been killed by a fall of roof in the Hafod Colliery, his two companions having a narrow escape with their lives. Another collier was with difficulty extricated from the debris of a similar fall in the Clee Hill colliery district, which hitherto has been very free from accidents.

In the action brought by the owners of the Cae Pen Ty Colliery against the High Sheriff of Denbighshire for contempt of an order of the Master of the Rolls, by putting an officer in possession of the colliery in November last, Mr. Justice Mellor decided, on Monday, that the High Sheriff had not been guilty of contempt, but had simply retained until further orders the possession he had before the injunction restraining creditors was given by the Master of the Rolls.

The decision given by Lord Chief Justice Coleridge and Mr. Justice Lopes in the case of Watkinson and others, against the Wrexham, Mold, and Connahs Quay Railway Company, is of importance to colliery owners. The plaintiffs—who are the proprietors of collieries and brickworks near Buckley—found their own wagons, and on this account sought a reduction of 4d. per ton from the rates of the railway company, which included the use of the wagons, or that the latter should find wagons. The Court decided that the railway company are bound under their Act to find wagons for traffic brought to their railway, but that they are not bound to send such wagons an inch off their own lines on to private branches and sidings. The decision leaves both plaintiffs and defendants in the same position as they were when the litigation commenced two years ago, except being poorer.

Whatever opinion may be formed on the strictures made by Mr. David Davies, M.P., on the state of the Cambrian Railway, all mine owners will agree with the sensible remarks he made in the House of Commons the other evening relative to the evil of having public-houses in proximity to mines and collieries. "The collieries in his district (South Wales) were among the most fiery in the country, and it was unreasonable to call upon the coal owners to protect the lives of their workpeople if the latter were to be tempted to muddle their brains with drink as they were now. The magistrates had been petitioned not to sanction a public-house in such a case, yet they had sanctioned it." Mr. Davies is right, and the magistrates he refers to were sadly to blame.

The North Wales Slate Quarrymen's Union have issued a new circular to their members, offering assistance to those desirous of emigrating, the amount granted being regulated by the time the grantee has been a member and the country he wishes to go to. Let the Union take care. They may push their emigration idea too far for their own interests.

REPORT FROM DERBYSHIRE AND YORKSHIRE.

March 27.—Trade in Derbyshire has undergone little change of late, and although scarcely so bad as it was some time since, yet there is plenty of room for improvement, for full work is anything but general. In the lead mining districts operations go on quietly as usual, there having of late been no new discoveries, or any attempt at launching out in the opening of some of the old mines that have long been standing, but which at one time were worked at a profit. Along the Erewash Valley, and in the northern part of the county, the collieries have been working very fairly, the severe weather having been of great advantage to them. House coal has been in better request of late, and a heavy tonnage has been passed on to the Midland Railway for the London market, more especially from Clay Cross, which has been sending at the rate of something like 6000 tons per week, whilst a good deal has also been sent from several other of the leading collieries. Prices at the pits, however, are still low and unremunerative, and it is to be feared that this state of things is likely to continue, for prices of house coal are not likely to go up during fine weather. Steam coal does not move off at all well, the demand being principally confined to the furnaces and locomotives. In other descriptions, too, business is very dull. Transactions in pig-iron have been slightly better, and there is a better feeling in the trade as to the future, and that an improvement may with some confidence be looked forward to. In manufactured iron there has been very little change, but some of the works continue to be fairly employed, but there has been a decrease in the number of persons at work at the mills and foundries.

In Sheffield trade in some branches is rather better, but there are still many workmen walking about, whilst the close of the present week, in all probability, will see the exhaustion of the fund raised by the Mayor to relieve the distressed. That the distress has been much greater than was generally supposed is borne out by the fact that the funds amounted to about 12,700*l.*, whilst a ladies' committee gave away a large quantity of clothing, blankets, and other necessities. Many, it is now to be feared, will have to apply to the guardians of the poor, a course which is most repugnant to the Sheffield working man. Amongst those who are best employed may be mentioned those connected with the Bessemer works, for there is still a demand for steel rails, although the price at which contracts are made is very low, and such as cannot leave much profit. Makers of crucible steel are still quiet, some few firms pushing forward the construction of steel rails, which are now coming into more general use, for in every way they are not only better, but cheaper than those made of iron, seeing that their lasting powers are so much greater.

A few of the old cutlery houses are working steadily in the best makes of table and other knives, but there are a good many men only partially employed, more especially in connection with the inferior qualities. Files have improved in request, but a considerable number of the men are now opposing a reduction of 5 per cent. proposed by some few of the masters, and are raising funds to maintain those who are likely to strike; but much appears to be doing in the heavy armour-plates, attention being now directed to the new composite ones made of steel and iron, and there is some probability that a demand for these will spring up on account of our own Government. A moderate business is being done in ordinary plates and sheets, whilst the engineering branches are still very dull. At the foundries in the town and district business seems to be getting rather better, there being improved enquiry for stoves, grates, piping, and other descriptions of builders' castings.

In the South Yorkshire district generally the coal trade has kept up very well, but owners complain that the business doing by them is at a loss, and if there is not a change they cannot go on much longer as they are now doing. It is expected the umpire's award with respect to the proposed 12½ per cent. reduction will be made next week, but even should all that be conceded it will scarcely admit of the collieries being worked at a profit. As it is there are several collieries now standing altogether, one of them undergoing the process of liquidation that will leave nothing for the unfortunate shareholders, whilst another one is standing, owing to the men refusing the terms offered to them. The collieries which were purchased during the "coal famine," as it was termed, are all likely to have a hard time of it, seeing that such very high prices were given for them. The best thing the directors could do would be to write off at least one-half of the capital as lost, and endeavour to realise a profit on the remainder.

The Oakwell Colliery, which has been frequently before one of the Vice-Chancellors during the last fortnight, is a very small concern, a short distance from Barnsley, and few practical men would give for it a tithe of what it has recently cost in litigation. At Hull on Tuesday a New York liner was launched from Earle's ship-building yard. This is the fifty-second steamer built for the firm of S. Wilson and Sons by the same builders.

Meetings of Public Companies.

ECONOMIC LIFE ASSURANCE SOCIETY.

The general court of proprietors was held at the office, Bridge-street, Blackfriars, on Saturday last.

Mr. HENRY BARNETT, the Chairman, presiding.

Mr. GRIMES (secretary) read the notice convening the meeting. The CHAIRMAN said he would not make any observations on the ordinary report, but when they came to the business of the quinquennial meeting he would make some remarks upon the general affairs of the society, which would save time, and answer every purpose. He moved that the general accounts and auditors' report, which had been read by the secretary, be received and adopted.

The Right Hon. E. P. BOUVIER seconded the resolution. A MEMBER asked why the investments were not set out in the accounts?—The CHAIRMAN said that full particulars were given in the statement which was forwarded to the Board of Trade, but any gentleman could see them at the office.

The CHAIRMAN, in answer to Mr. ALGER, said the auditors had not examined the securities, nor did he conceive it was part of their duty to do so; but the trustees, who were responsible to the society, had examined all the securities, and had satisfied themselves that they were in existence, and were correctly stated. (Hear, hear.) The resolution was then put, and carried.

On the motion of the CHAIRMAN, seconded by the Right Hon. E. P. BOUVIER, the sum of 160*l.* was awarded to the auditors for their services during the past year.

On the motion of the CHAIRMAN the auditors were unanimously re-elected.

The meeting then resolved itself into a General Quinquennial Court. The eleventh quinquennial report was taken as read.

The CHAIRMAN moved the adoption of the report, and said he would make a few remarks upon it, because these occasions were very interesting, and the circumstances which had attended the progress of the society during the past five years were certainly worthy of remark. He thought he might congratulate the members of the society at large upon the report which the directors had been able to make. (Hear, hear.) The past few years had been a period of great depression in trade, and the society had undoubtedly felt the effects of that in the amount of assurance business which had been brought to the office. The proposals for assurances and the policies issued had been altogether less than they had been on former occasions; but still, as he had said, the result of the whole proceedings had been very satisfactory. The actuary, Mr. Fisher, had taken great pains and bestowed immense labour in going minutely into all the details of the business, which had been most thoroughly investigated, and the directors thought that the results which Mr. Fisher had brought out were nothing more than were honest and true. (Hear, hear.) The society had not only held its own, but the directors were able to show a larger surplus than at any former quinquennial meeting, so much so, that had it not been for extraordinary circumstances, which he would shortly explain, the results which they were able to state would have been almost marvellous. (Cheers.) However, the fact was there were certain fortunate circumstances which they must take into consideration in dealing with this large surplus. It happened that in every one of the years of the quinquennial period the claims by death had been less than had been anticipated by the ordinary calculations, so that the total payments for claims had been less than the sum expected by 182,796*l.* Of course they could not depend upon that occurring forever, and they might find, and probably would find, that in the course of the next few years the tide might possibly turn a little against them in that respect. Still, they had the money in hand now to deal with as might be considered wise and prudent. Then came another point which had been in favour of the society, which was that certain reversions which were bought some years ago had fallen in and brought a considerable amount of profit. Another accidental circumstance had been that certain old lives had dropped before the end of the period, and they had been shut out from what would have been a large bonus, and those policies had only received during the past few years the contingent bonus set aside at the last division. It also happened that the policies which had fallen in were not only rather less in number but had also been for smaller sums, on the whole, than might have been anticipated. All these circumstances led to the conclusion that the division of the surplus, which was announced in the report, was really wise and prudent. It was true the directors proposed to pay by a large sum out of the total which they had to deal with, but he would tell them presently how it was to be applied, more or less, for the benefit of the assured, more immediately than if it had merely accumulated to form part of the next quinquennial division. The directors had anxiously considered this question, and he hoped the members would be of opinion that, on the whole, they had dealt wisely with the funds of the society in the proposal which they were now making. Perhaps it would be well to take the opportunity of commenting a little upon the figures. As regarded the liabilities he would say—what they would probably be in the future he could not say, although by the figures which were empowered to make their calculations at 4 per cent., yet the directors had thought it wise to reduce the rate of interest to 3½ per cent. for the valuation of their liabilities. He would now read a few interesting figures with regard to the business of the society during the past year. The number of policies issued had been 319, against 388 in the previous year, showing a decrease of 69; the sum assured was 275,280*l.*, against 328,150*l.*, showing a decrease of 52,870*l.*; the new premiums were 97,81*l.*, against 124,418*l.*, showing a falling off of 26,607*l.*; but, on the other hand, the premiums received were 225,000*l.*, against 227,212*l.*; the total income had risen from 383,738*l.* to 370,937*l.*, showing an increase of over 7000*l.*; and the total funds had increased to 3,513,881*l.*, which was 103,000*l.* more than at this time last year. The policies in force were 10,073, against 10,125, so they had rather a smaller number of policies in force, and the amount assured by them was 8,405,000*l.*, against 8,313,000*l.*, showing a rather less liability, whilst the assets had materially increased. (Cheers.) With regard to the rate of interest, he was happy to say—and this would be satisfactory to those gentlemen who had asked about the investment—that the directors had been able by a judicious selection of the investment, and without increasing the risk, to arrive at an average rate of interest during the year of 4.75, against 4*l.* 6*l.* 11*d.* in the preceding year. (Cheers.) With regard to the claims, those accruing last year were 254,000*l.*, against 224,000*l.*, which was a larger amount than in the previous year, but 9144*l.* less than was anticipated, so they arrived at last at the total amount of 182,000*l.* odd, which had been saved out of the sums they had anticipated to have paid during the quinquennial period. (Cheers.) That was all he need say with regard to the annual figures of the last year's business. When they came to compare the figures of the quinquennial period of course they were very much larger, and he would give very different from those in the last year's accounts. In the first place the policies issued had been less in the five years than in the preceding five years. They had issued 1960 policies, against 2015 in the previous quinquennial period, but the amount assured had been larger, amounting to 1,683,779*l.*, against 1,505,000*l.* in the previous quinquennial period. The new premium income during the last quinquennial period was 46,987*l.*, against 43,970*l.*, showing a new premium income of 2017*l.* The liabilities cancelled had been 1,476,000*l.*, so they had cancelled liabilities to the extent of 185,000*l.*, beyond what they had in the previous period. The policies in force were 10,072, whilst five years ago they were 9812, which was a material increase, and showed that the business had been progressing materially. The amount assured in the last quinquennial period was 8,305,000*l.*, against 8,009,000*l.*. The total premiums receivable amounted to 221,848*l.*, against 219,000*l.* at the previous period. The total revenue had been 1,859,984*l.*, against 1,792,418*l.*, an increase of 67,566*l.*. The value of the total liabilities was now 2,949,000*l.*, against 2,481,000*l.* at the close of the previous period, but they had now 52,866*l.* of surplus, against 383,884*l.* at the last quinquennial period—or an increase of 180,000*l.* in accumulation of profits during the five years. (Cheers.) That was a remarkable state of things, and one which they could but regard as satisfactory. Of this bonus the directors proposed to allot as absolute bonus 388,000*l.* in absolute cash bonus, which was over 100,000*l.* more than they gave at the last quinquennial period, and he should tell them that that amount would average about 36 per cent. upon all the premiums paid during the last five years, the proportion of bonus to premium in 1874 being about 26½ per cent., as compared with the 36 per cent. which was now proposed to be given. (Cheers.) This 388,000*l.* of absolute bonus would yield a reversionary sum of 607,000*l.*. Inasmuch as they kept back 174,000*l.* it was right he should mention how they intended to employ a portion of that bonus for the benefit of the policy holders. In the first place the directors proposed to give, as before, a contingent bonus of 1 per cent. per annum upon policies falling due, as claims, during the next five years, which would probably take up about 35,000*l.*. Then came the point upon which the directors dwelt in their report—an alteration which they proposed to make, which would entail an alteration in the Deed of Settlement. It had often been urged upon the directors at the annual meetings that the office was at some disadvantage in comparison with others by reason of paying the claims at the end of six months instead of three months. He had told them upon previous occasions that being allowed for and calculated upon a six-months' payment, it could not be deviated from without loss to some one, but now there was a large sum in hand, and the feeling of the directors was that it would be an acceptable alteration to the policy holders at large, and he hoped would have a favourable effect with the public, who looked closely to the various offices before taking out a policy of assurance. The directors now proposed to take power to pay the claims at the end of three months instead of six. (Cheers.) But there was an appreciable sum involved in that, and as much as 30,000*l.* out of the 174,000*l.* would be wanted to meet that fairly in the loss of interest. Another small change was that the directors proposed to give the members 30 days' law for the payment of their premiums instead of 15. (Cheers.) The sum of money involved in that was small—probably 1000*l.* would pay it all. There was one other alteration which it was proposed to make—with respect to the distribution of the bonus. They had hitherto gone upon the plan that any life which entered between the quinquennial periods received no intimation of bonus until the expiration of the second subsequent quinquennial period; that was to say, if a person assured next year he got no bonus until nine years. In point of fact they added at the end of five years a portion to that policy of bonus equivalent to what he would have had at the present time for the period for which he had paid, but the directors proposed for the future that those policies upon which only two or three premiums had been paid that the bonus at the rate which was being divided should be calculated up to the period of Dec. 31, and that would be announced to the policy-holder, who would not get the benefit of it until he had paid the 5 premiums, but when the 5 premiums

had been paid the sum would be credited to his policy, and after that he would take the contingent policy in case of death till another bonus was declared. These were the points which were altogether new, and he hoped the members would endorse the directors' view, so that they might be carried out. (Hear, hear.) It would be necessary to alter the deed, and for that purpose an extraordinary meeting would be held that day fortnight, and there must be afterwards a confirmatory meeting. He hoped he might not only congratulate the members upon the present position of the society, but he thought he might now say it was established upon so firm a basis, and in so thoroughly sound a position, that they might look forward with confidence to a continuance of the prosperity with which they had been blessed during the past 55 years that the office had been in existence. The result of the past five years might not be altogether attained or equalled in the next five, but at the same time the funds were now so large that with judicious management the ball must go on rolling, and he thought they might look forward to most satisfactory results to those who were assured in the office. (Cheers.) He hoped they would feel with him that the society thoroughly deserved the confidence of the public. All their acts the directors wished to make as public as possible, and to distribute every information which people interested in the office might be entitled to, so as to give them the real means of judging of the actual position and solidity of the office, and place them in the position of being able to recommend it to their friends in the same confidence which the directors did. (Cheers.) In conclusion, the CHAIRMAN moved the reception and adoption of the report.—The Right Hon. E. P. BOUVIER seconded the resolution.

After a short discussion, in the course of which several members expressed their extreme satisfaction with the results, the resolution was put to the meeting, and carried.

On the motion of the CHAIRMAN, seconded by the Right Hon. Mr. BOUVIER, resolutions were passed authorising the distribution of the bonus in the way recommended by the directors.

The retiring directors were re-elected, and cordial votes of thanks having been passed to the Chairman, directors, and actuary (Mr. Fisher), the secretary (Mr. Grimes), and the staff, the meeting broke up.

JAVALI COMPANY.

The following report will be presented by the directors at the meeting of shareholders, to be held on April 17:—

The accounts for the year ended Dec. 31, 1878, show a more favourable result than those of any previous year, and afford fair hopes of ultimate success.

During the autumn the whole district in which your mine is situated was visited with an outbreak of fever of a virulent nature, causing a diminution in the ordinary supply of labour, and a corresponding reduction in the work done during the latter months of the year.

The improved financial position of the company, joined to the good feeling of the debenture-holders, has enabled the board to renew at 7 per cent. the greater portion of the 10 per cent. debentures falling due in May next. The remainder have been or will be paid off.

The position of the preference capital has also received the attention of your board, and communications have been made to the preference shareholders suggesting the exchange of their shares for debentures upon terms which, it is believed, will be mutually advantageous to all concerned. The proposal has been accepted with almost entire unanimity, and an extraordinary meeting of the company has been called for the 27th inst. to take the first of the legal steps necessary for carrying out the arrangement. During the discussion of this matter it has been discovered that the legality of the attachment of a preference dividend to that issue of shares is, to say the least, doubtful, and this discovery makes it more than ever desirable that the proposed exchange should be effected.

Mr. Hall retires by rotation from the board, and being eligible offers himself for re-election, as does Mr. Frewer, the auditor.

[For remainder of Meetings, see to-day's Supplement.]

WASHING AND SEPARATING METALLIFEROUS ORES.

A hydraulic machine, the principal parts of which are a vertical cylinder having a hopper at its upper end and a closed vessel at its lower end, which he calls a receiver, having suitable fittings and connections, has been invented by Mr. JOSEPH SRENSON, of Groombridge, near Tunbridge Wells. He provides a cylinder, by preference of iron, and fixes it vertically in a frame of wood or metal. On the top end of this cylinder he places a hopper, which he divides into two nearly equal compartments by placing an iron plate as a diaphragm across its centre, the top edge of which is fully as high as the sides of the hopper, and the lower edge of which reaches down to within one to two inches of the upper end of the cylinder. To one side of this hopper he fixes a trough or launder to receive the mineral matters to be operated upon, and about the centre of the other side of the hopper and in the opposite compartment he fixes a spout to carry away the minerals treated. He fits the lower end of the cylinder into a water-tight vessel which he calls a receiver, and in the side of this receiver and near the top he inserts one end of a pipe furnished with a stop-cock or valve having a figured index to its lever. He connects the other end of this pipe to the delivery main of a forcing pump, or by preference to a pipe in connection with a cistern or other head of water having a gravitating pressure equal to not less than 25 to 30 ft. high. He also provides a valve or door to the bottom of the receiver, which may be opened or closed at intervals when emptied of its contents. He takes the mass of metalliferous ores as delivered from a pair of rollers or crushers, such as are in ordinary use for crushing and pulverising ores, furnace cinders, or other mineral matters, and he passes it through a revolving cylinder fixed in nearly a horizontal position. He divides the revolving cylinder into sectional compartments having wirework of different mesh to each section, so as to assort the mineral matters into masses of various sizes; such cylinders are in common use.

The revolving cylinder or sieve is fed at its highest end, and that portion of minerals under operation which are too large to pass the wirework are delivered out at the lower end of the cylinder into the hopper of the improved hydraulic separator, and he operates upon it and separates the heaviest metalliferous portion from the lightest and worthless portion thus:—He opens the stop-cock or valve so far as to admit a stream of water into the receiver and upwards through the cylinder until it flows away through the spout on the outlet side of the hopper. He now feeds the separator with the crushed minerals, the metalliferous portion of which having a greater specific gravity than the gangue or more earthy portion renders care necessary in adjusting the velocity of the stream so as to allow the heaviest particles to fall into the receiver below while the lightest particles are floated away through the spout on the outlet side of the hopper above. In some cases he places two or more of these hydraulic separators in connection with each other, so that the outlet spout of the first separator shall deliver its surplus contents into the hopper of the next below it; but in this arrangement he makes the cylinder of the first one the smallest, the next below larger, and so on through the series, and thus he reduces the velocity of the rising column of water in each consecutively; the heaviest particles of ore are thus secured in the first receiver, the next lighter portions in the second, and so on through the series whatever number may be used.

In treating the finest portion of the minerals which have passed through the finest wire sieve of the revolving cylinder he passes it through one or more of the separators in which the upward stream has a very slow velocity, to allow the finest portion of the ore to sink through the almost stagnant water into the receivers, thus securing the richest portion of the "slimes." In all cases during the process of separation the metalliferous portion of the minerals falls into the receivers, and the earthy worthless portion is floated away through the spouts as waste. With the view of obtaining a uniform result he provides and fixes a pressure gauge to the pipe between the stop-cock and the receiver, and when this is once adjusted to the pressure and correct action of the machine the lever of the stop-cock is uniformly opened to the same figure on the index. This, however, is supposing that the pressure is constant and uniform.

THE LEAD TRADE.—The lead market remains firm. Rich Spanish lead has been sold at Newcastle-on-Tyne this week at 15*l.* per ton; Carthagena ordinary lead realises 14*l.* 17*s.* 6*d.* per ton. This shows a rise of 2*l.* 5*s.* per ton from the lowest figure realised, and 1*l.* 10*s.* a ton upon the last sales of rich lead.

Now ready, THE MINING JOURNAL, VOLUME FORTY-EIGHT, FOR 1878. Neatly bound and lettered, price 1*l.* 12*s.* 6*d.*. To be had from our office, 26, Fleet-street, London, or through any newsagent or bookseller.

HOLLOWAY'S OINTMENT AND PILLS—NEVER AT FAULT.—In all irritations of the skin, sores, ulcers, burns, and scrofulous enlargements of the glands Holloway's ointment presents a ready and easy means of cure, which never disappoints the most favourable expectations. It manifests a peculiar power in restraining inflammation, removing stagnation, cooling the heated blood, and checking all acrimonious or unhealthy discharges. While thus acting locally, the pills are no less remarkable for their power in improving the general condition and habit of body, which renders the cures complete and permanent. Under the general influence of these potent remedies, the puny infant becomes the robust child; the pale and emaciated regain colour and rotundity; and the dyspeptic eat freely, without fear.

NEW ZEALAND-STEEL RAILS.

TENDERS INVITED.

TO IRONMASTERS.—WANTED 100,000 TONS OF STEEL RAILS, To be manufactured in New Zealand.

PUBLIC WORKS OFFICE, WELLINGTON, NEW ZEALAND, 6th November, 1878.

WRITTEN TENDERS will be received at Wellington by the Hon. the Minister for Public Works up to 30th September, 1879, for the SUPPLY of the WHOLE or any portion of

ONE HUNDRED THOUSAND TONS OF STEEL RAILS,

To be manufactured within the Colony from New Zealand ores. Payment will be made in cash on delivery at the works—the Government of New Zealand agreeing to pay, in addition, one-half of the cost of the conveyance to the Colony, by sea, of the workmen to be engaged in the manufacture.

Information as to the mineral resources of New Zealand, and maps indicating the various localities in which mineral deposits are situated in relation to means of transport, may be had on application to the Agent-General of New Zealand, 7, Westminster Chambers, Victoria-street, London, or to Walter W. Evans, Esq., 65 1/2, Pine-street, New York.

As it is unlikely that intending contractors will enter into an engagement of the above nature without first satisfying themselves by personal inspection as to the position and extent of the raw material in New Zealand required for the manufacture of iron, every facility and information on this subject will be afforded on application to Dr. Hector, C.M.G., F.R.S., Director of the Geological Department, Wellington.

For the information of parties desiring to tender, it may be stated that the official returns show that there were imported into New Zealand within the last eight years 15,500 tons of cast-iron and 93,000 tons of wrought-iron, exclusive of iron for Government and other railways, during which period 1068 miles have been constructed and opened for traffic.

New Zealand colonists who may have friends and correspondents connected with the iron manufacture are requested to be good enough to draw attention to the highly advantageous and profitable field for enterprise which this colony presents to those who can bring the necessary capital and practical experience to bear upon such manufacture.

JOHN KNOWLES, Under Secretary for Public Works.

£1500 REQUIRED, at SIX PER CENT., upon the security of the LEASE of a LARGE STONE QUARRY, upon which £3000 have been spent in development, the stone being in universal demand. The Quarry is now in active operation, the money being required for the erection of further machinery, &c.

None but Principals or their Solicitors treated with. Address, "Box, No. 209," Post Office, Bristol.

NICKEL AND COBALT REFINING AND GERMAN SILVER WORKS, 16, OZZELL STREET NORTH, BIRMINGHAM.

STEPHEN BARKER begs to inform the Trade that he has the following articles for sale:—REFINED METALLIC NICKEL, REFINED METALLIC BISMUTH, OXIDE OF COBALT.

GERMAN SILVER IN INGOTS, SHEET, WIRE, &c. NICKEL AND COBALT ORES PURCHASED.

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JOHN HENSHALL WILLIAMSON, MANUFACTURER AND REFINER, Purchaser of Borate of Lime and Tincal.

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Mines inspected and reported on at home and abroad.

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Will SUPERINTEND or EXAMINE and REPORT on MINES on the PACIFIC COAST. Having had 14 years' experience in Gold and Silver Mining in Mexico, California, and Nevada. Government Mining Engineer for the Province of British Columbia.

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Assays or Complete Analyses made of Copper, Silver, Lead, Zinc, Tin, and other Ores.

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ADVANTAGES OFFERED BY THE SOCIETY:—

The Lowest Rates of Premium on the Mutual System for Young and Middle-aged Lives, with early participation in profits.

Number of Policies in force... 10,072

Sums assured, with Bonus additions... £9,796,486

Security—Accumulated Fund... 3,375,359

Annual income... 370,957

Total claims paid, with Bonus additions... 5,761,528

Total Bonuses declared to 1879 inclusive... 3,507,415

BONUS.—The Society being on the Mutual principle, the assured share the whole of the profits. Policies effected before 31st December of each year receive a full year's bonus for the year of entry.

DIVISION OF PROFITS, 1879.

Assets... £3,512,661

Liabilities... 2,949,995

Surplus... £ 562,666

Prospectuses, Statement of Accounts, and full particulars, may be obtained on application to—

JOHN RALPH GRIMES, Secretary.

CAMPION'S MAP OF COLLIERIES, IRON, TIN, AND COPPER WORKS, RAILWAY STATIONS, AND DOCKS, IN THE MINERAL DISTRICT OF SOUTH WALES. Size, 3 ft. 9 in. by 2 ft. 6 in.

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In the Court of the Vice-Warden of the Stannaries. Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACTS, 1862 and 1867, and of the OLD TINCROFT CONSOLS MINING COMPANY (LIMITED).—Notice is hereby given, that ALL CREDITORS of the above-named company are required, on or before the 5th day of April next, to SEND IN their NAMES and ADDRESSES, and the AMOUNTS and PARTICULARS of their SEVERAL CLAIMS, to JOHN HENRY HAMLEY, the Official Liquidator of the said company, at the Stannaries Court Office, in Truro, within the said Stannaries. FREDERICK MARSHALL, Registrar. Dated Registrar's Office, Truro, 26th March, 1879.

In the Court of the Vice-Warden of the Stannaries. Stannaries of Cornwall.

IN the MATTER of the COMPANIES ACTS, 1862 and 1867, and of the OLD TINCROFT CONSOLS MINING COMPANY (LIMITED).—The Vice-Warden has, by an Order made in the above Matter, bearing date the 24th day of March instant, APPOINTED JOHN HENRY HAMLEY, of Truro, within the said Stannaries, an Officer of the said Court, to be absolutely the OFFICIAL LIQUIDATOR of the above-named company. FREDERICK MARSHALL, Registrar. Dated Registrar's Office, Truro, March 26th, 1879.

BOWERS' ALLERTON COLLIERIES (LIMITED).

We hope shortly to be in a position to FIX THE DATE for the SALE of the above VALUABLE LEASEHOLD COLLIERIES, and announce the ISSUE of the PARTICULARS and CONDITIONS OF SALE. HEPNER AND SONS, Auctioneers, Leeds.

IN THE MATTER OF THE BLAENAVON IRON AND STEEL COMPANY (LIMITED), AND IN THE MATTER OF THE COMPANIES ACTS, 1862 AND 1867.

NOTICE IS HEREBY GIVEN, that all the FREEHOLD and LEASEHOLD PROPERTY and WORKS of the Company at BLAENAVON, in MONMOUTHSHIRE, together with the PLANT, MACHINERY, FIXTURES, STOCK, and EFFECTS of the said Company on and about the same, are FOR SALE, BY PRIVATE CONTRACT. Further particulars and information can be obtained of the Official Liquidators, at the office of the said Company, No. 86, Cannon-street, London, E.C.

COLLIERY AND MINERAL PROPERTY FOR SALE, NEAR BURYPORT, SOUTH WALES.

The property is held under lease for a term of 60 years, from the 29th day of September, 1874, and consists of about ONE HUNDRED AND FIFTY ACRES of COAL and other MINERALS, comprising several VALUABLE BEDS OF IRONSTONE and FIRE-CLAY. There are ten workable seams of coal, of which only a small area of four seams have been worked.

The colliery is most convenient for working large areas of adjoining coal, 300 acres of which have been offered to the present tenants on reasonable terms. The coal is highly anthracite, and is sold for smelting, lime burning, and household purposes.

The colliery plant and machinery is in good working order, and the closest inspection at the hands of any intending purchaser is invited.

For further particulars, apply to Messrs. ALPHRUS SMITH and Co., 79, Mark-lane, London, E.C.

EXCELLENT CHINA-CLAY WORKS FOR SALE.

In full work. Very large home and foreign trade connection, Apply, Mr. T. KINSMAN, St. Austell.

VALUABLE SLATE QUARRY FOR SALE.

FOR SALE, BY PRIVATE CONTRACT, AN EXCELLENT SLATE QUARRY, capable of an extensive development, so as to produce an immense quantity of best quality Roofing Slates and Slate Slabs at comparatively small outlay.

It must be sold. No reasonable offer will be refused. Apply to Mr. JOHN PIERCE, Festiniog, near Carnarvon.

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TO LET, at low rentals, WORKS AND LAND, in plots of TWO to TEN ACRES, near SWANSEA.

Coals obtainable from 4s. 6d. per ton. Water good and abundant. Any description of manufacture can be carried on.

Excellent railway, canal, and dock accommodation close at hand. Apply to RICHARD HALL, Esq., 37, Great George-street, Westminster; or Mr. THOMAS WILLIAMS, Aberdulia, Neath, Glamorganshire.

HORIZONTAL ENGINE, 15-horse power, strong, and well-finished, with fly-wheel, wrought crank shaft 5 in. diameter, and massive box bed; suitable for winding or general purposes; quite new. Price £70.

HORIZONTAL ENGINE, 8 in. cylinder, beautiful and most improved design, new and complete, with pump and governor. £38.

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STEAM PUMPS, 8 in., with ENGINES and BOILERS, FOR SALE (CHEAP); also a COMBINED 8-h.p. VERTICAL BOILER and ENGINE, and a quantity of WROUGHT and GALVANISED PIPES, and SCREW LAUNCH, length 40 ft.

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FOR SALE, a NEW 70 inch cylinder CORNISH BEAM PUMPING ENGINE, 10 ft. stroke in cylinder and 9 ft. in the shaft, with steam case, metallic piston, and wrought gudgeon. The false cover, perpendicular pipes, weigh posts, working and nozzle gear all fitted bright. A strong substantial well made engine, complete, including cast iron casings for top and bottom nozzles with bright covers, holding down bolts and wrought-iron caps and bolts for connection to main rod.

Apply to WILLIAMS'S PERRAN FOUNDRY COMPANY, Perranarworthal, Cornwall. Dated Jan. 29, 1879.

22 IN. AIR COMPRESSOR, on massive bed-plate, with slide bars, connecting rods, and crank, FOR SALE (CHEAP).

Improved AIR COMPRESSING ENGINES, with 12 and 9 in. cylinders. Also PAIR OF 9 inch WINDING ENGINES complete, with 4 feet drum, geared 3 to 1. Apply to

WARSON AND HILL, ENGINEERS, NOTTINGHAM.

18 H.P. PORTABLE STEAM ENGINE, with link motion, reversing gear, ready for delivery; also gear to wind and pump.

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ditto	49	4 17 6	Glasgow Caradon	70	4 0 0
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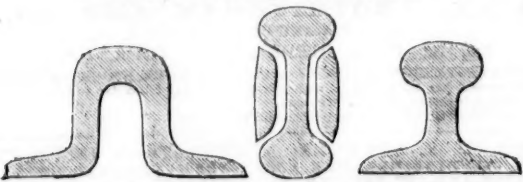
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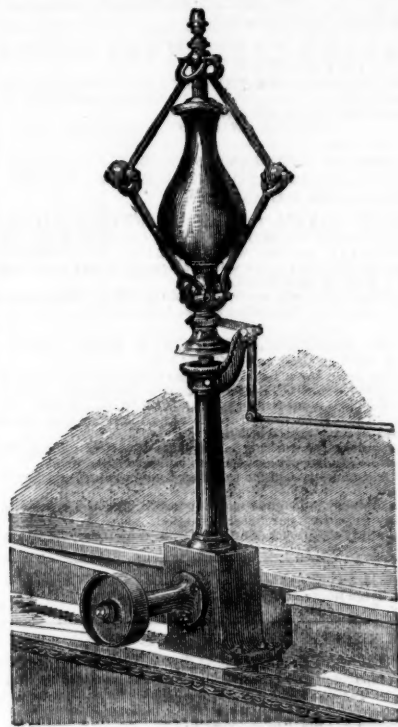
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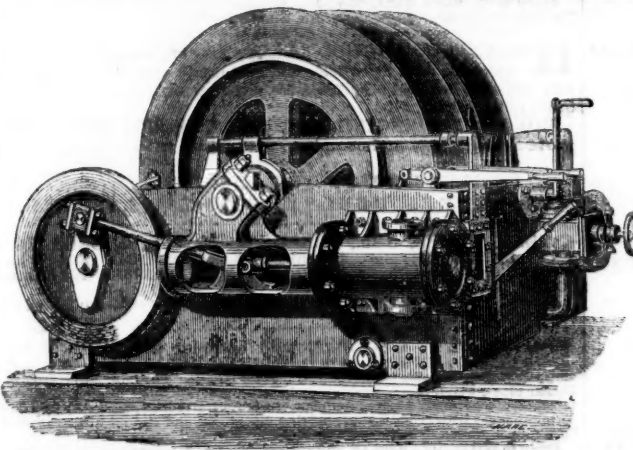
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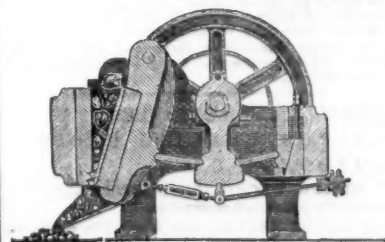
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IRON AND COAL COMPANIES

Amount.		Paid.	Last wk.	Clos. pr
40000	Aberdennant, <i>i</i> , Llandidies*	1 0 0..	36 ..	36 3/4
2500	Aberllyn,* <i>i</i> , <i>dt</i> , Carnarvon	10 0 0..	12 ..	10 12
10000	Aberystwyth,* <i>s-i</i> , Cardigan	8 0 0..	—	—
80	Albion, <i>i</i> , Cornwall	100 0 0..	—	—
12000	Asketon, <i>i</i> , Carnarvonshire*	5 0 0..	1 ..	36 1
50000	Ballycunnagh, <i>c</i> , schuil	2 0 0..	—	—
12000	Bedford Unit,* Tolstet. (H. Mab.)	1 0 0..	36 ..	36
12000	Bel View, <i>c</i> , Gwynedd	2 0 0..	3 ..	136 2
30000	Bettws-y-Coed,* <i>i</i> (20,000 lsd)	1 0 0..	1 ..	36 1
8000	Blaen Caealan,* <i>i</i> , Cardigan	3 0 0..	—	—
2927	Ble Hill, <i>t</i> , <i>c</i> , St. Agnes	4 68 ..	36 ..	36
30000	Bodidir,* <i>i</i> , <i>dt</i> , Denbighshire	1 0 0..	136 ..	136 136
1000	Bollidgh Vale,* <i>i</i> , Durham	8 0 0..	—	—
300	Botalack, <i>t</i> , <i>c</i> , St. Just†	123 15 0..	25 ..	20 25
2000	Bowden Hill,* ms	1 0 0..	—	—
3000	Bradwell Moss Rake	1 0 0..	1 ..	36
10 00	Brewer,* <i>s-i</i> , Wrexham	2 0 0..	3 ..	2 3
250	Brownell, <i>c</i> , St. Neot	0 10 0..	36 ..	36 36
50000	Cambrian,* <i>c</i> , Cardiganshire	2 0 0..	236 ..	2 236
20000	Central Foxdale,* <i>i</i> , of Man*(H. sh.)	1 8 0..	—	—
10000	Central Van,* <i>i</i> , <i>dt</i> , Llandidies	8 0 0..	—	—
5120	Clementina, <i>i</i> , Llanrwst*	2 0 0..	136 ..	1 136
7800	Combellack,* <i>t</i> , Wendron	2 0 0..	—	—
8000	Combarnin,* <i>s-i</i> , North Devon	0 70 ..	—	—
1400	Crosswood Mining Lands, <i>i</i> *	1 0 0..	36 ..	36
15000	Cwm Brywno,* <i>i</i> , Cardigan	2 0 0..	236 ..	2 236
15000	Cwm Dywfor,* <i>c</i> , <i>s-i</i> , Wales	1 0 0..	—	—
3000	Ditto, 12½ per cent. pref.	1 0 0..	—	—
3000	Dymysty with New, Cardiganshire	5 0 0..	—	—
1020	D'yresby Cons., <i>i</i> , <i>dt</i> , Carnarvon	10 0 0..	8 ..	6 8
1800	D'yresby Mountain, <i>i</i> , <i>dt</i> , Llanrwst.	20 0 0..	40 ..	30 40
20000	Denbighshire Consolidated, <i>i</i> *	3 0 0..	136 ..	136 136
2000	Derwent, <i>i</i> , Durham	4 0 0..	1 ..	36 1
3000	Dubby Syke, <i>i</i> , Durham*	0 15 0..	36 ..	36
6144	East Caradon, <i>c</i> , St. Cleer†	2 19 0..	36 ..	36 36
4000	East Chiverton, <i>i</i> , Perranrhuaboe	7 76 ..	136 ..	1 136
8000	East Craven Moor,* <i>i</i> , Pateley Bdge	10 0 0..	10 ..	8 10
8000	East Goginan, <i>i</i> , Cardigan	3 0 0..	—	—
8000	East Roman Gravel*, <i>i</i> , Salop	1 0 0..	—	—
1722	East Wh. Lovell, <i>t</i> , Helston	8 0 0..	3 ..	136 2
8000	Elgar,* <i>s-i</i> , Cardiganshire	9 16 0..	36 ..	36 36
2500	Froegoch, <i>i</i> , Cardigan (1000 issued).	1 0 0..	—	—
10000	Frederley,* <i>i</i> , Durham	1 0 0..	236 ..	2 236
3950	Gawton, <i>c</i> , Tavistock	4 56 ..	36 ..	36 36
2000	Glan Clwyd,* <i>i</i> , Gwyddelwern	1 0 0..	—	—
40000	Glenroy,* <i>s-i</i> , Isle of Man	4 50 0..	36 ..	36 36
2000	Glyn,* <i>i</i> , Llandidies	2 0 0..	36 ..	36 36
1000	Goreau, & Level Newydd, Card., <i>i</i>	2 10 0..	—	—
3000	Goren,* <i>s-i</i> , Carmarthen	1 0 0..	1 ..	36 1
2000	Great Foxdale, <i>i</i> , I. of Man (H. sh.)	0 18 0..	—	—
2500	Great Pant-y-Pydwyl, Flintshire	8 0 0..	536 ..	436 36
3000	Gr. Wheal Eleanor, <i>t</i> , Holywell	3 0 0..	—	—
3000	Great Wheal Rodd,* <i>s-i</i> , Cornwall	1 17 8 ..	36 ..	36 36
1000	Hatchope Gill,* <i>i</i> , Durham (£1 sh.).	0 10 0..	1 ..	36 1
800	Harefoot Moor,* carb. <i>i</i> , Derby	1 0 0..	3 ..	136 2
1400	Herodsford,* <i>i</i> , Durham	0 16 0..	36 ..	36
1000	Herodsford, <i>i</i> , near Liskeard†	1 0 0..	6 ..	3 6
1000	Hush Bladdfodd Miners,* <i>i</i>	0 6 0..	36 ..	36 36
500	Killaloe, <i>s-i</i> , Tipperary	2 0 0..	—	—
1000	Kilfrithre, <i>t</i> , Chacewater	2 136 ..	136 ..	136 136
1000	Kingston Con., <i>s-i</i> , Stoke Climsland.	1 0 0..	36 ..	36
	Ditto, preference	1 0 0..	—	—

000 Ladywe

00 Ladywell, * <i>i</i> , <i>alop.</i>	2 10 0	1 1 3	1 3 1
00 Ditto, 10 per cent. pref., <i>l.</i> each	2 10 0	1 ... 3 1	...
00 Lead Era, * <i>i</i> , Mold	0 10 0	...	3 1 3
000 Levant, <i>c</i> , <i>t</i> , St. Just	10 0 0	3 1 3	3 1 3
000 Livingstone Consols, <i>t</i> , St. Agnes	0 10 0	...	3 1 3
000 Lomax, <i>s-i</i> , Perranzabuloe	1 0 0	1 1 3	...
000 Lovell, <i>t</i> , Wendron	0 10 0	2 ... 1 3	...
000 Llanrhadr, <i>i</i> , Montgomery *	2 0 0	...	...
000 Llanrwst, * <i>i</i> , Carnarvon	2 0 0	2 ... 1 3	...
24 Mawston, * <i>i</i> , South Wales	20 0 0	2 ... 1 3	...
000 Medley Moor, <i>t</i> , Wendron	2 9 10	...	...
000 Newender, <i>i</i> , Cardigan *	3 0 0	1 1 3	4 1 3
000 Mid Devon Copper *	0 8 8	1 1 3	1 1 3
000 Ditto	0 8 8	...	3 1
00 Mineral Corp. of Great Britain	10 0 0	11 ... 10 11	...
00 Monydd Gerdau, <i>i</i> , Cardigan * (Red.)	5 0 0	2 1 3	2 1 3
00 Morfa Du, <i>z</i> , <i>g</i> , <i>s</i> , Anglesea	1 0 0	1 ... 3 1	...
00 Nant-y-Ronen, <i>s-i</i> , Cardigan *	1 0 0	...	...
00 Nascant Copper *	1 0 0	...	...
88 New Brodifroyd, * <i>c</i> , Cardigan (Sl. sh.)	2 10 0	3 ... 2 1 3	...
00 New Dolcoath, <i>s</i> , <i>c</i> , Camborne *	2 0 0	1 1 3	1 1 3
00 New East Foxdale, <i>s-i</i> , Isle of Man	0 10 0	...	...
92 New Hendra, <i>t</i> , Breage	2 9 0	...	...
00 New Tincroft, <i>t</i> , Lelant	5 0 0	3 ... 2 1 3	...
00 North Cornwall, <i>i</i> , Cornwall	5 0 0	5 ... 5 1	...
00 North Laxey, * <i>i</i> , Isle of Man	12 10 0	46 ... 28. 46	...
00 North Levant, <i>t</i> , <i>c</i> , St. Just	1 0 0	1 ... 1	...
00 North Melton, <i>c</i> , <i>mn</i> , <i>i</i> , Devon	8 17 10	...	...
86 North Trekerbery, <i>c</i> , St. Agnes	5 0 0	...	...
00 Oola Hills, * <i>s-i</i> , Limerick	2 0 0	...	...
00 Pandora, * <i>i</i> , Carnarvon	2 0 0	...	...
00 Park Valley, * <i>s-i</i> , North Devon	0 4 0	...	...
00 Parracombe, <i>s-i</i> , Devon	3 0 0	...	...
88 Parsy Mountain, * <i>c</i> , Anglesea	5 10 3	...	...
00 Phenix & B. Phenix, <i>t</i> , <i>c</i> , Link. &	5 0 0	1 1 3	3 1 3
00 Ploton, * <i>s-i</i> , Holywell, fully paid	1 0 0	1 ... 3 1	...
00 Plymington, <i>s-i</i> , Llanidloes	2 0 0	68 ... 46. 68	...
00 Port Nigel, * <i>s-i</i> , Carnarvon	2 0 0	...	...
00 Prideaux Wood, <i>t</i> , Llanvethery	2 0 0	...	...
12 Prince of Wales, <i>c</i> , Calstock	2 0 0	...	...

☐ Relictian
☐ Rhodanus

Rohrliaian Consoal c, Gwinear	0 10 0	..	ed.	"
Rhydulyn,* i, Mold	10 0 0	..	% % %	1
Rookhope, i, Durham*	10 0 0	..	11 .. 10 11	2
	1 10 0	..	% % %	3
Sneubroke, s-i, Montgomery	5 0 0	..	...	1
So. Cwmystyllen, i, Cardiganshire.	2 10 0	..	8 ... 3 3	1
South Darren, i, Cardigan*	1 10 0	..	...	1
South de Eresby Mountain,	1 0 0	..	1% 1% 1% 1%	1
So. Devon United Cooper*	1 0 0	..	1 ... % 1	1
South Doleath, c, t, Redruth	12 6 0	..	...	Stk
So. Molton Cons., s-i, No. Devon	0 3 0	..	...	1
South Roman Gravel, i,	1 10 0	..	3s. ... ls. 3s.	1
South Beckwith, t, c, Camborne	8 5 0	..	...	\$100
South Trolasne, t, c, Camborne	2 6 0	..	% ... % %	1
South Wheel Crofty, c, Illogan	45 10 10	..	7% 7 7%	1
Steddfa,* i, Cardigan	1 0 0	..	1% ... 1 %	1
St. Lawrence, Amal.,	2 0 0	..	...	Stk.
St. Patrick, i, Halkin, Holywell*	1 0 0	..	1% ... 1 %	1
Succoes, &c., i, Derb.(12,000), called)	1 0 0	..	...	1
Sunnyside, i, Durham	2 0 0	..	...	1
Talybont, s-i, Cardiganshire	1 0 0	..	...	1
Tamar, s-i, Bearlston*	1 0 0	..	1% ... 1 1%	1
Teasdale,* i, Durham	1 0 0	..	% ... % %	1
Teign Valley, i, bar., Bridford	1 0 0	..	...	Stk
Temple, i, Cardigan*	1 0 0	..	...	Stk
Tolgus Consols,* c, Redruth	5 0 0	..	3% ... 3 3%	1
Tolguish Wood, i, Redruth	6 10 0	..	...	1
Trethellan, i, Orantock	2 0 0	..	...	1
Truro,* i, Neuquis, Flintshire	10 0 0	..	...	1
Tyn-y-Fron,* i, Cardigan	1 0 0	..	1% ... 1 1%	1
Ditto	0 5 0	..	% ... % %	1
Vanghan*, i, Cardiganshire	10 0 0	..	...	1
Victor,* i, Flintshire (£1 share)	5 5 0	..	...	1
West Assheton, i, Carnarvon	1 0 0	..	1 ... % 1	1
West Bassett, c, Illogan]	6 13 4	..	4% . 4% %%	Stk.
West Combmartin, s-i, North Devon	1 0 0	..	...	Stk.
Ditto	0 2 6	..	9 ... 7 9	Stk.
W. Craven Moor, i, Pateley Bridge]	10 0 0	..	...	Stk.
West Goginan,* Cardiganshire	2 0 0	..	% ... % %	Stk.
West Liangyn, s-i, Montgomery.	2 0 0	..	...	Stk.
West Mary Ann, i, Menheniot	0 12 6	..	% ... % %	7%
West Milwr, s-i, Flint	1 0 0	..	...	1
West England Spat. Iron & Ld. Smelt,	5 0 0	..	5 ... 5	Stk.
West Palace Bridge, i, Yorkshere	1 0 0	..	2% ... 2 2%	Stk.
West Rooknar, s-i, c, s, h, c, Camborne	5 10 0	..	...	25
West Vor, t, c, s, Brecon	1 0 0	..	...	10
West Wheal Peewer, t, Redruth	0 10 0	..	3 ... 3% 3	1
Wheel Agaz, c, Illogan	0 10 0	..	...	1

Wheat Basset, c, Illogan	18	10	0	1	1	1
Wheat Conter, t, St. Agnes	33	2	6	1	1	1
Wheat Comfort, c, Gwennap	2	0	0	—	—	—
Wheat Orebay, s, Tavistock	1	7	0	—	—	—

Wheel Basnet, c, Illogan	33	13	...	5 1/2	4	Stk.
Wheel Coates, f, St. Agnes	3	2	...	1 1/2	1 1/2	Stk.
Wheel Comfort, c, Gwennap	1	7	...	...	...	Stk.
Wheel Grestor, c, Tavistock	4	6	...	3 1/2	3 1/2	20
Wheel Greenville, c, Camboorne	2	1	...	2 1/2	3 1/2	13
Wheel Russell, c, Tavistock	4	10	...	...	...	8
Wheel Sisters, c, Lelant	2	1	...	...	...	12
Wheel Ury, i, c, Redruth	14	0	...	9	8 1/2	9
White Cliff, i, c, Llanrwst	18	6	...	3 1/2	3 1/2	Stk.
Wicklow, c, c, c, Wicklow	2	10	...	...	...	5
						5

a, slate; sl, coal; c, copper; g, gold; l, lead; s, silver; sl, slate;
 s-l, silver-lead; t, tin; s, zinc.

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 Limited

WAGON COMPANIES.			
10	Birmingham Wagon Co. [L.].....	10 0 0..	12½ 13
10	Ditto, 2nd issue	4 0 0..	13½ 2
20	Ditto, pref., 6 per cent.	10 0 0..	10½ 10½ pm
10	British Wagon Co. [L.].....	10 0 0..	14½ 14 pm
10	Gloucester [L.].....	10 0 0..	6½ 6½
10	Ditto, 5th issue	8 0 0..	2½ 2½
10	Met. Rail. Car. and Wagon Co. [L.]..	8 0 0..	2 2
10	Ditto, pref., 6 per cent.	2 0 0..	¾ ¾ pm
10	Midland	10 0 0..	6½ 7
20	N. Cent. Wagon Co. [L.].....	30 0 0..	19 20
5	Rail. Car. [L.] (Oldbury)	8 0 0..	1¼ 1
5	Ditto, pref., 6 per cent.	8 0 0..	¾ ¾
20	Sheffield Wagon Co. [L.].....	18 0 0..	¾ ¾ pm
10	Yorkshire Wagon Co. [L.].....	10 0 0..	1 1

* Anglo-American	100	0 00	57 1/2	57 1/2
10 Brazilian Submarine	10	0 00	6 3/4	7
10 Direct United States Cable	20	0 00	11	11 1/2
10 Eastern	10	0 00	7 3/4	7 3/4
10 East, Exten., Australia and China	10	0 00	7 3/4	7 3/4
10 East Northern	10	0 00	8 3/4	8 3/4
10 Indo-European	25	0 00	2 1/2	2 1/2
10 Mediterranean Extension	10	0 00	2 3/4	2 3/4
10 Reuter	10	0 00	9 3/4	10 1/4
10 Submarine	100	0 00	21 1/2	22 1/2
10 West India and Panama	10	0 00	3 1/4	3 1/4
10 Western and Brazilian	30	0 00	3 1/4	3 1/4
10 Western Union, 7 per cent. Mort. Bonds \$1000	100	0 00	11 1/2	11 1/2

Atlantic and Great Western Leased	100	0 0..	54	57	0
Lines, Rental Trust	31	10 0..	83	88	0
Australian Agricultural	8	0 0..	53	55	6 1/2
Austral. Mort. Land and Finance [L.] ..	7	0 0..	8	7	pm dis
Avonide Engine [L.]	100	0 0..	109	111	
Baltimore and Ohio, 6 per cent.	100	0 0..	6	7 1/2	
Brighton Aquarium [L.]	100	0 0..	6	7 1/2	
Cent. of the Oregon Co.	100	0 0..	84	86	
Cent. Pacific of Calif., 1st Mort.	100	0 0..	110 1/2	111 1/2	
City of London Real Property [L.] ...	12	0 0..	13	13 1/2	pm
Diamond Rock Boring	4	10 0..	3 1/2	3 1/2	dis
English and Foreign Credit	8	0 0..	—	—	
Fore Street Warehouse [L.]	14	0 0..	8	7	pm
Foster, Porter, and Co. [L.]	10	10 0..	17 1/2	18 1/2	
Gas. & Chem. Works Co. [L.]	8	0 0..	—	—	
Greenhill [L.]	1	0 0..	—	—	
Kit Hill Tunnel [L.]	1	0 0..	—	—	
Hudson's Bay Company	17	0 0..	13 1/2	14 1/2	
Huntington Copper and Sul. Co. ...	9	0 0..	—	—	
Illinois Central, \$100 shares	100	0 0..	81	83	
Illinois & St. Louis Bridge, 1st Mort. ...	100	0 0..	90	93	
Ditto, do., 7 per cent.	100	0 0..	40	45	
Illinois Cent. Sinking Fund, 8 p. cent. ...	100	0 0..	102	104	
Ditto, 6 per cent.	100	0 0..	113	115	
Imperial Credit [L.]	7	10 0..	7 1/2	8 1/2	
Ditto, Surplus Certificate	—	—	6 1/2	6 1/2	
Lehigh Val. Con. Mort., A, 6 p. cent. ...	100	0 0..	103	105	
Milner's Safe [L.]	10	0 0..	7	8	
Monmouth Disent [L.]	8	0 0..	8	8 1/2	
N. West. Rail. Con. Mort., 6 per cent. ...	10	0 0..	88	90	
Pawson and Co. [L.]	80	0 42	8 1/2	8 1/2	pm
Peninsular and Oriental Steam	100	0 0..	112	113	
Pennsylv. Gen. Mort. 6 p. cent., 1880. ...	100	0 0..	102 1/2	103 1/2	
Ditto, Con. Sink. Fund, 6 p. c., 1905 ...	100	0 0..	190	200	
Scottish Assn. Investment Company.	100	0 0..	124	129	
Ditto, 8 p. cent. Preference	30	0 0..	—	—	
Suez Canal shares	8	0 0..	29 1/2	29 1/2	
Telegraph Construc. & Maint. Co.	8	0 0..	2 1/2	2 1/2	
Ditto, Second Bonus Three per Cent. ...	10	0 0..	20 1/2	21	
Tharvis Sulphur and Copper Co.	10	0 0..	111	113	
Union Pacific Land Grant, 1st Mort.	100	0 0..	110	112	
Union Pacific Railway, 1st Mort.	5	0 0..	—	—	
West of England Compressed Peat ...	5	0 0..	—	—	

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